Male Allies Decrease Negative Effects of Tokenism for Women in Male Dominated Workplaces

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Abstract

Previous research has examined the antecedents and consequences of tokenism, and recent research has begun to address the utility of interventions for coping with these experiences. This is of particular importance for women in in science, technology, engineering, and math fields (STEM) as they are likely to find themselves in token contexts due to their minority status. Research has yet to identify the impact that dominant group "allies" may have in reducing the negative effects of tokenism. In Study 1, we test the protective effects of the presence (vs absence) of male allies in token and gender-balanced contexts. We asked White women (N=194) to imagine applying for a job at a STEM related company, manipulated the gender composition of their coworkers, and the existence of a male coworker ally, and to respond to several dependent measures related to tokenism. The expected two-way interaction emerged on most dependent measures, with an ally in token conditions being protective compared to all other conditions. In Study 2, we assessed whether the gender of the ally matters. We asked White women (N = 204) to imagine working with either a male, female, or no ally. As expected, participants exposed to a male ally reported decreased effects of tokenism. In Study 3, we rule out the possibility that a friendly coworker would be as helpful as an ally. White women (N = 329) were asked to imagine working in a company while manipulating the gender of a coworker who was either an ally or a friend. Only participants who were shown a male ally showed decreased negative effects of tokenism. The results of this study present a possible novel intervention to help retain women in male dominated fields.

Keywords: allyship, tokenism, gender, intergroup relations

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In a workplace environment, an employee is considered a "token" if they belong to a group that constitutes an extreme minority of the total employees (Kanter, 1977). Tokenism can result in three distinct consequences for minority members who find themselves in such contexts: assimilation, visibility, and contrast. First, assimilation occurs when members of a dominant group perceive and evaluate members of the token group in terms of stereotype-consistent traits. Individuals are more likely to remain within stereotyped roles in a work environment when they are viewed as stereotypical of their group. Second, members of token groups receive more attention and are more visible in the workplace, leading to increased pressure on token individuals to perform well and increased scrutiny of their performance. Third, contrast occurs when members of the dominant group exaggerate the differences between members of the dominant group and the token group. This leads members of dominant groups to see token individuals as very different from members of the dominant group.

The consequences of tokenism include feelings of isolation, increased role stress, and greater pressures to prove competence (Jackson, Thotis, & Taylor, 1995). These consequences translate to differential treatment in the workplace. Although token individuals are less likely to receive sufficient instruction on tasks, they are met with hyper-supervision while performing those tasks (Yoder & Berendsen, 2001). Women who are the only member of their gender group in a male-dominated workforce also experience strained relationships with coworkers and lack of support from their male coworkers (Yoder & Berendsen, 2001).

Simply imagining being the only woman in a work environment is enough to elicit the consequences of tokenism (Cohen & Swim, 1995). Women who imagined themselves as the only female in a work environment anticipated stereotyped evaluations from their peers, wanted

to change the gender composition of their work group, and expressed a greater desire to leave the work environment entirely (Cohen & Swim, 1995). This research implies that people are well aware of the negative effects that occur due to token status in a group context.

The negative effects of tokenism are of particular concern to women interested in pursuing careers in science, technology, engineering, and math fields (STEM). Women remain largely underrepresented in the STEM workforce, with the greatest disparities occurring in the fields of engineering, computer science, and physical sciences (NSF, Science & Engineering Indicators, 2016). The lack of representation in these fields results in tangible, material differences between men and women, as well as psychological differences. Those women who are employed in STEM fields earn approximately 31% less than their male peers (*Women in Science, Technology Engineering and Mathematics (STEM)*, 2017). In addition to fewer women entering STEM fields, women are also less likely than men to stay in STEM occupations. Retention of women in STEM fields is particularly low compared to occupations that are not male-dominated (Glass, Sassler, Levitte, & Michelmore, 2012).

Support from Women

With the knowledge of women's negative experiences in STEM fields, research has begun to examine different interventions to increase women's interest and retention in these fields. Many of these studies have examined the effect of support from other women in a workplace setting. One straightforward intervention is to remove the token status of women in STEM workplaces. Beaton, Tougas, Rinfret, Huard, and Delise (2007) found that women performed better on math-related tasks when in a group with equal numbers of women and men compared to being the token woman in a group. The salience of an individual's gender is decreased in groups with equal gender representation, reducing the negative effects of stereotype

threat. Stereotype threat occurs when an individual is concerned about confirming a negative stereotype of a social group to which they belong after their social category has been made salient (Steele & Aronson, 1995). This concern of confirming a stereotype ironically increases behavioral outcomes associated with that stereotype. Stereotype threat due to gender salience has been shown to decrease women's performance on stereotypically male tasks, such as math and science (Steele, 1997; Spencer, Steele, Quinn, 1999; Schmader, 2002). In groups where both genders are equally represented, individuals are less likely to self-categorize in terms of gender compared to token conditions (Abrams, Thomas, & Hogg, 1990; Oakes, Turner, & Haslam, 1991), and are therefore less likely to perform in a manner consistent with negative stereotypes regarding math performance.

Exposure to exemplars in STEM-related fields also attenuates the negative impacts of tokenism. Positive female role models increase women's interest in STEM fields (Hoyt & Murphy, 2016) and have a protective function on women's identity within STEM workplaces (Shapiro, Williams, & Hambarchyan, 2013). Additionally, female role models increase the likelihood of women's retention in STEM occupations (Drury, Siy, & Cheryan, 2011; Hermann, Adelman, Bodford, Graudejus, Okun, & Kwan, 2016).

As lack of social support and feelings of isolation are two of the main outcomes of tokenism, individuals who speak up for women in the workplace may be able to play a role in decreasing these negative outcomes. Wright (1997) found that women who received messages that described tokenism and discrimination in the workforce as illegitimate were more likely to state that they would engage in collective action for gender equality. These results were consistent both when the message was delivered by ingroup members (other women) and by

advantaged outgroup members (men). This research begins to shed light on the part that advantaged group members can play to aid women in STEM fields.

More generally, people benefit from receiving support from members of their ingroup. Ellemers, Doosje, and Spears (2004) found that respect from members of an ingroup increases collective self-esteem; that is, the self-esteem one has as a member of a particular group. Moreover, respect from an out-group did not compensate for lack of respect from one's ingroup. Rather, out-group respect coupled with ingroup disrespect intensified feelings of guilt and shame experienced due to low ingroup respect (Ellemers et al., 2004). When women are in a male-dominated context, respect from other women may be one way to protect against the effects of tokenism.

Support from men

Although support from women may be beneficial, it is not always possible. Male dominated workplaces may not have female role models for incoming female employees to look up to. Although removing the token context can increase women's performance on stereotypically male tasks, it is not always possible for companies to change the gender composition of their employees. Given that men are already over-represented in STEM fields, is it possible that they may aid in protecting against negative effects of tokenism?

Men acting as allies for women may exert a powerful effect on reducing the effects of tokenism. An ally is an individual who works alongside a disadvantaged group and recognizes the need for further progress in the fight toward equal rights (Drury & Kaiser, 2014). We conceptualize allyship as differing from solidarity in that allyship occurs at an individual level while solidarity is a group level phenomenon.

Due to certain privileges men have as a group, they are more effective in confronting sexism. Rudman, Moss-Racusin, Phelan, and Nauts (2012) found that women who advocated for gender equality were seen as bossy, complainers, and self-serving. On the other hand, men who delivered messages about gender equality were perceived to be likeable and trustworthy. This positive view of men may lead others to be more receptive to men's messages of gender equality than messages delivered by women. Rudman and colleagues (2012) found similar results for men and women who confronted others for sexist behavior. Men were evaluated more positively than women after confronting sexism. Indeed, when women confronted others for their sexist behavior, the likelihood of backlash for doing so increased. Women who were known to confront sexism were less likely to get hired for a job (Rudman & Glick, 2001) and were less likely to be chosen for promotions than women who did not confront sexism (Fiske, Bersoff, Borgida, Deaux, & Heilman, 1991; Heilman, 2001; Lyness & Judiesch, 1999; Sonnert & Holton, 1996). Women who confronted sexism were perceived as less likeable than those who did not confront, even when the confrontation was to avoid sexual assault (Branscombe & Weir, 1992).

In addition to lowered perceived likability, members of marginalized groups who advocate for diversity policies are seen as less competent than men who endorse diversity policies (Hekman, Johnson, Der Foo, & Yang, 2017). Hekman and colleagues (2017) argued that diversity-valuing behavior engaged in by members of marginalized groups activates the negative stereotypes associated with a group and implies motivation for social competition against the dominant group (e.g., White men). Such backlash may also be due to perceptions that diversity-valuing behavior by members of marginalized groups is seen as motivated by self-interest or nepotism (Wenneras & Wold, 2001).

Decreased likability for women who confront sexism comes from one's ingroup as well as outgroups. Women exposed to an ingroup member who claimed a failing grade was due to discrimination identified less with their gender and evaluated the woman as less likeable than women who attributed a negative grade to poor answer quality. Further, women who claimed that an outcome was due to discrimination were perceived to be avoiding personal responsibility more than an outgroup member who made the same claim (Garcia, Reser, Amo, Redersdorff, & Branscombe, 2005). However, women who view gender discrimination to be pervasive held more positive perceptions of women who protest gender discrimination than women who do not (Garcia, Schmitt, Branscombe, & Ellemers, 2010). Thus, women's perceptions of women who confront sexism is moderated by the extent to which the behavior is seen as appropriate.

The fear of social costs associated with confrontation makes everyday women less likely to speak up against sexist actions or behavior (Good, Moss-Racusin, Sanchez, 2012). Confronting sexism is a behavior that defies the female societal norms of politeness, leading women to be more reticent to confront (Swim & Hyers, 1999). Reticence to confront or speak out against sexism can reinforce a norm that discriminatory behavior is acceptable (Blanchard, Crandall, Brigham, & Vaughn, 1994) and can lead others to perceive the sexist treatment as less serious (Rasinski, Geers, & Czopp, 2013).

Men do not receive the same backlash and social costs as women when confronting sexism. Confrontations against sexism were seen as more legitimate and serious when the message was delivered by a male than by a female (Czopp & Monteith, 2003; Drury & Kaiser, 2014). Observers expressed more surprise when a man, compared to a woman, confronted sexism (Gervais & Hillard, 2014), and were more likely to focus on the sexist act rather than the confronter themselves (Drury & Kaiser; Eagly, Wood, & Chaiken, 1978).

In addition to being perceived more positively when confronting sexism, male allies can exert a positive impact on women's psychological well-being. Exposure to male feminists increases the likelihood that women will confront sexism. Cihangir, Barreto, and Ellemers (2014) found that women exposed to male allies who spoke out against sexist treatment experienced higher self-esteem and performed better on stereotypically male tasks (such as logic and math tests).

Messages delivered by feminist men increase large scale behavioral changes as well as individual confrontations. Interactions with feminist men bolster women's intentions to participate in collective action against gender inequality (Hercus, 1999). Indeed, messages delivered by men that highlight the benefits of gender equality for both men and women increase both men and women's solidarity with feminism and feminist collective action intentions (Subašić, Hardacre, Elton, Branscombe, Ryan, & Reynolds, 2018).

Lastly, not all strategies studied to reduce the negative effects of tokenism are necessarily positive. Danaher and Branscombe (2010) found that token hiring practices "fooled" women into endorsing inequality in a workplace. Women who were exposed to a token hiring practice were more likely to hold positive perceptions of and to identify with the company. Token hiring practices increased women's individual mobility beliefs, therefore perpetuating overall inequality in the company. Only when exposed to completely closed hiring practices that did not increase women in the workforce at all did women exhibit reduced identification with the company (Danaher & Branscombe, 2010).

Overview of Current Studies

Previous research has begun to consider various ways that the negative impact of a token environment may be decreased. No research to date has examined the potential effect that male

allies may serve in reducing these negative effects for women in a token workplace. To address this gap in the literature, the current studies aim to examine whether having a vocal ally in a STEM related field will decrease the negative effects of tokenism (i.e., feelings of isolation, lack of support) for members of marginalized groups.

We present results from three experiments. In the first study, we examine the impact that allies from a dominant group (men) can have in reducing negative tokenism effects for women, and how this compares to non-token work contexts. Next, we replicate and extend the results from Study 1 by examining the differential impact that the gender of the ally has on decreasing negative effects of tokenism (Study 2). Last, we examine whether a friendly coworker is sufficient to decrease the negative effects of tokenism, or if it is necessary that the ally overtly state their support for gender equality (Study 3).

Study 1

We aimed to test the potential effect that a male ally may have in reducing negative tokenism effects for women in predominantly male fields. We hypothesized that the presence of a male ally in a token context will protect against the negative effects of tokenism, including feelings of isolation and perceived lack of support. Specifically, we predicted a two-way interaction between the context (token vs gender balanced) and the presence (vs absence) of an ally, whereby the presence of a male ally will have a protective function against the negative effects of tokenism that is comparable to a non-token context. Further, individuals exposed to a token work environment without an ally will report the least efficacy and anticipated work support compared to individuals exposed to either an ally or a non-token context.

Pilot Test

Before conducting the first study, a pilot test was conducted to ensure that the manipulations and materials were understood as intended.

Participants and Procedure. Ninety-two White, female (*N*=92*)* participants were recruited from a large Midwestern university. Participants were instructed to imagine applying for jobs in a STEM field. Participants were randomly assigned to view information about a company that manipulated the presence versus absence of a male ally in a male-dominated workplace. They then read a description of a company and were shown pictures and descriptions of their potential coworkers at said company. Participants then answered manipulation checks regarding the gender composition of coworkers shown and the presence of an ally. In addition, the participants rated the photos of their potential coworkers. These pictures were selected from the Chicago Face Database and were all rated as similar in attractiveness (*M* = 3.73, *SD* = 0.85 on a 1-5 scale), prototypicality (*M* = 4.07, *SD* = 0.42, on a 1-5 scale), and age (*M* = 28.35, *SD* = 5.25). Lastly, participants were given a chance to indicate any problems they perceived with the study.

Results. Results of the pilot test showed that the manipulations were effective. A conceptual manipulation check assessed the extent to which participants believed that the company promoted gender equality. Those placed in a token environment without an ally reported significantly lower beliefs that the company promoted gender equality (*M* = 3.41, *SD* = 1.54) than individuals who were exposed to an ally in a token environment (*M* = 4.12, *SD* = 1.49; *t*(66) = -1.91, *p* = 0.05). Results from a MANOVA indicated that the coworker pictures were not significantly different on age, prototypicality, or attractiveness (*F*(1, 91)= 1.28; *p* =

0.37). Additionally, no participants indicated any issues with the coworkers or understanding the materials.

Method

Participants. Two hundred and sixty White, female (N= 260) participants were recruited via TurkPrime. Participant ages ranged from 18-87 years (M=44.83). Sixty-six participants failed either the manipulation checks (N =13) or the attention check (N = 53) asking them to simply select *"Somewhat Disagree"* and were dropped from analysis. After applying the exclusion criteria, the final sample dropped from 260 to 194.

Design. This experiment employed a 2 (coworker composition: token vs equal gender representation) x 2 (male ally: present vs absent) between-subjects design.

Procedure. The study was ostensibly about people's ability to immerse themselves in a workplace environment. After completing the consent form, participants completed a demographic questionnaire and items regarding the extent to which they identify with their gender and as a feminist. Next, participants were asked to imagine that they were on the job market for a position in the field of chemistry. All participants then read a brief flyer that described a company they were to imagine interviewing at and were shown pictures and descriptions of their potential coworkers. After reading the flyer, participants were randomly assigned to a condition with all male coworkers and one male ally, all male coworkers and no ally, an equal number of male and female coworkers with a male ally, or an equal number of male and female coworkers with no ally. In the "ally" condition, one of the male coworkers expressed interest in creating an inclusive environment for women at the company, whereas in the "no ally" condition, none of the coworkers mentioned working toward gender equality. In the

"token" condition, the participant was presented with only male coworkers, whereas the "non-token" condition had an even balance of male and female coworkers. After the participants were presented with their potential coworkers at the company, they completed a manipulation check and all dependent measures. Finally, participants received a full debriefing and m payment for their time. Because TurkPrime requires a flat fee and gathers participants from multiple platforms, we are not aware of the level of payment given to each participant.

Measures.

Feminist identification. Four items (shown in Appendix A) measured the extent to which participants identified as feminist (Cronbach's $\alpha = 0.92$). Participants used a1 "Strongly disagree" to 7 "Strongly agree" Likert scale to respond to each item (e.g., *"I identify as a feminist,"* and *"I am proud to be a feminist"*). See Table 1 for correlations between key dependent measures.

Gender identification. Four items (shown in Appendix A) measured the extent to which participants identified with their gender (Cronbach's $\alpha = 0.94$). Examples of this measure include *"I value being a member of my gender group"* and *"I am proud to be a member of my gender group."* Participants answered these items with a 1 "Strongly disagree" to 7 "Strongly agree" Likert scale.

Inclusion. Eleven items (shown in Appendix A) measured the extent to which participants felt that they would feel included in the workplace (Cronbach's $\alpha = 0.94$). Participants used a1 "Strongly disagree" to 7 "Strongly agree" Likert scale to respond to each item (e.g., *"I feel that I would miss out on opportunities to be mentored"* (reverse scored), and *"I believe that my coworkers would like me.")*.

Efficacy at workplace. Seven items were adapted from the Psychological Empowerment Scale (Mendon, 1999). These items measured the extent to which participants felt that they would be competent and agentic in the workplace (Cronbach's $\alpha = 0.87$; see Appendix A). Participants used a 1 "Strongly disagree" to 7 "Strongly agree" Likert scale to respond to each item (e.g., *"I would feel confident working in this company,"* and *"I would have the authority to make decisions at work."*).

Support from coworkers. Four items measured perceived support from coworkers in the company (Cronbach's $\alpha = 0.91$; see Appendix A). Participants used 1 "Strongly disagree" to 7 "Strongly agree" Likert scale to respond to each item (e.g., *"I feel that my coworkers would work to empower each other,"* and *"If any sexist treatment occurred while working at this company, I would have support from my coworkers"*).

Positive perception of work environment. Two items measured the extent to which participants felt that the work environment would be a positive experience ($r = 0.79$; see Appendix A). An example item from this measure is *"I would feel happy working at this company."*

Manipulation checks. Items referring to the composition of the group served as a manipulation check on the tokenism and ally condition. The manipulation check for the ally manipulation was *"The workplace had an employee who expressed support for gender equality."* For the token manipulation, participants responded "yes" or "no" to *"My group of coworkers had an even balance of men and women."* In addition, participants answered a conceptual manipulation check that assessed the extent to which the participant believed the company promoted gender equality.

Results

Manipulation Checks. The majority of participants (74.6%) correctly identified the manipulations. Those who failed the manipulation or attention check were dropped from analysis. A main effect for the conceptual manipulation check emerged so that participants exposed to an ally perceived the company as promoting gender equality more than participants who were not exposed to an ally ($F(1, 191) = 14.18$, $p < 0.001$).

Inclusion. A two-way ANOVA (gender composition X ally presence) revealed no significant main effects of ally presence (F (1, 190) = 0.37, $p = 0.55$) or gender composition (F (1, 190) = 0.81, $p = 0.36$**)**. Consistent with the hypothesis, the ally by token interaction (F (1, 190) = 4.37, $p = 0.03$, $\eta^2 = 0.02$) was significant. Participants rated workplaces with a token environment and no ally as particularly low in anticipated inclusion (M = 4.76, SD = 1.19), significantly lower than gender-balanced workplaces or token workplaces with an ally (see Figure 1). There were no significant differences in anticipated inclusion for women exposed to workplaces that included an ally or a non-token work context, with or without an ally (See Table 2 for means across conditions; $p > 0.80$).

Efficacy at workplace. A two-way ANOVA indicated no significant main effects for either the ally manipulation (F (1, 190) = 1.02, $p = 0.31$**)** or the token manipulation (F (1, 190) = 0.17, $p = 0.67$**)**. A marginal two-way interaction emerged between ally and token conditions (F (1, 190) = 2.81, $p = 0.09$, $\eta^2 = 0.014$). This indicated that individuals who were exposed to a token work context without an ally expressed marginally less anticipated efficacy at the company (M = 5.29, SD = 0.84), than women exposed to a non-token environment or an ally (See Figure 2). There were no significant differences in anticipated efficacy for women exposed to

workplaces that included an ally or a non-token work context, with or without an ally (See Table 2, $p > 0.74$). These results provide tentative support that the presence of a male ally aids in increasing anticipated efficacy.

Support from Coworkers. The main effect of the token context was significant (F (1, 190) = 14.10, $p < 0.001$**)** with participants anticipating more support in a work environment with equal numbers of men and women than with no women. Additionally, the main effect of ally was significant (F (1, 190) = 13.49, $p < 0.001$), which indicated that participants expected more support at a company when an ally was present. These main effects were qualified by a significant two-way interaction between ally and tokenism (F (1, 190) = 9.93, $p = 0.001$, $\eta^2 = 0.043$). This interaction revealed that participants who were exposed to a token environment with no ally anticipated significantly less support from coworkers (M = 4.88, SD = 1.31) than participants exposed to either an ally or a non-token context (See Figure 3). Tukey HSD tests showed that there were no differences in anticipated support from coworkers for women exposed to workplaces that included an ally or a gender-balanced work context, with or without an ally (See Table 2, $p > 0.89$).

Positive perception of work environment. The two items were standardized and combined to form an index of positive perception of the work environment. A two-way ANOVA between the ally condition and the token condition indicated no significant main effects of either the ally manipulation (F (1, 190) = 0.003, $p = 0.90$**)** or the token manipulation (F (1, 190) = 1.37, $p = 0.24$**)**. The expected significant two-way interaction (F (1, 190) = 5.81, $p = 0.01$, $\eta^2 = 0.027$) indicated that participants who were exposed to a token environment with no ally anticipated significantly less inclusion in the workplace (M = -0.65, SD = 1.16) than participants exposed to either an ally or non-token context (See Figure 4). There were no significant differences in the

extent to which participants rated their perception of the work environment as positive for women for workplaces that included an ally or a non-token work context, with or without an ally (See Table 2, $p > 0.74$).

Discussion

Study 1 supported the hypothesis that exposure to a male ally in a male-dominated work context decreased typical effects of tokenism (anticipated isolation, anticipated efficacy) felt by women. Women who were exposed to a workplace wherein they were the only woman and did not have a male ally anticipated the least support and inclusion, compared to women in work environments that included an equal ratio of women to men or a male coworker who promised to be an ally in a token context. Participants in token work contexts without an ally also viewed the company to be significantly less positive and anticipated less efficacy in the company than women shown a work environment with an ally or that had a non-token context. However, the presence of an ally served a protective function against a token context. Women who were shown an ally in a token context anticipated the same amount of inclusion and support from their coworkers as women shown a non-token work environment. There were also no differences in the extent to which participants viewed the company as positive between women exposed to an ally and women exposed to a non-token work environment. Lastly, there was also tentative support that women who were shown an ally felt as much efficacy in the workplace as women who anticipated a non-token work context. That is, women who anticipated entering a token workplace with a male coworker as an ally anticipated the same amount of inclusion, efficacy, and support as women who anticipated a workplace with an equal number of men and women.

These results show that the knowledge that one has an ally from the dominant group is equally as powerful in creating a welcoming atmosphere as having equal men and women in a

workplace. Of course, these results are not to say that increased hiring of women in STEM fields is not necessary when a workplace has a male ally. Instead, these results provide evidence for a useful tactic in instances where an organization cannot quickly change the composition of their employees.

The results of this study showed that an ally is as useful in creating a welcoming atmosphere for women in male dominated fields as work groups that include equal representation of both men and women. The presence or absence of an ally in a work environment that included equal representation of both men and women had no additional impact on anticipated inclusion, support, and efficacy in the workplace. Instead, the presence or absence of a male ally was only impactful in token conditions. Because of this, it is necessary to focus on contexts in which the presence of an ally can make a difference.

Study 2

We sought to replicate and extend our initial findings by examining whether the gender of the ally will affect the utility that the ally may serve in protecting against negative effects of tokenism. Research on the persuasiveness of feminist messages indicates that a man serving as an ally to a woman may be perceived as more persuasive and meaningful than a woman serving as an ally (Drury & Kaiser, 2014; Eagly et al., 1978; Gervais & Hillard, 2014; Rudman et al., 2012). As men hold higher status in society, as well as the numerical majority in scientific fields, it may be especially empowering to know that there is a member of that dominant group that could be called upon for support. Nevertheless, despite the evidence supporting the benefit of a male ally, it is possible that a female ally could be especially empowering for women in a male-dominated field. People often benefit more from receiving support from other ingroup members

compared to outgroup members (Ellemers et al., 2004), and appreciate having their views validated by similar others.

However, there is reason to believe that a female ally may be less helpful than a male ally in a male-dominated workplace. Given that women are less likely to confront sexism due to social costs (Good, Moss-Racusin, Sanchez, 2012; Swim & Hyers, 1999), a female ally may send a signal that the work environment is especially unwelcome to women. Moreover, women who act as allies to other women may be perceived as complainers or self-serving (see Rudman et al., 2012), and may not be as effective in protecting women from the negative effects of a token environment.

Study 1 examined the differential impact of coworker gender composition (tokenism vs balanced) and the presence or absence of a male ally. Because the results from Study 1 indicated no differences in anticipated inclusion, support from coworkers, perception of the work environment, and anticipated efficacy in the workplace in non-token environments regardless of the presence of an ally, Study 2 focuses solely on token work contexts. The current study includes several additional measures to more fully probe the potential that allies may serve, as well as perceptions of the allies themselves. We predict that women exposed to a male ally will report higher levels of workplace efficacy, inclusion, and support than women exposed to a female ally, but that a female ally will serve to undermine negative effects of tokenism more than no ally.

We hypothesize several mediational pathways to begin to examine why an ally is helpful in decreasing the negative effects of tokenism. We expected there to be two distinct pathways through which a male ally could be beneficial. First, a male ally sets a tone for a welcoming and inclusive work environment. A male ally may signal that one has support from coworkers in a

company. The extent that one feels support may increase anticipation of being included in the workplace. Second, a male ally may impact the extent to which women feel that they may be confident and competent working in the company. If an individual feels that they are respected by their fellow coworkers, they will likely anticipate experiencing greater efficacy in the workplace. We predict that perceptions of support will mediate the path between the ally manipulation and anticipated inclusion. Further, we predict that perceptions of respect from coworkers will mediate the path between the manipulation of the coworker condition and efficacy, as well as coworker condition and anticipation of stereotyped evaluations.

Method

Participants. A power analysis in G*Power was conducted prior to collecting data. Results from the a priori power analysis indicated that 207 participants were necessary to achieve a power of 0.90 with a medium effect size. In anticipation of dropping participants due to quality of TurkPrime data, 259 participants were collected. Fifty-five participants were dropped from final analyses due to failed manipulation or attention checks. The final sample consisted of 204 White women recruited via TurkPrime between the age of 19 and 81 (M = 49.67, SD = 16.34). Because TurkPrime gathers participants from multiple crowd-sourcing platforms, we are unsure of the exact amount that the participants were paid.

Design. The experiment used a three cell (male ally, female ally, no ally) between-subjects design. All participants were exposed to a male-dominated work environment with one woman and five men. This was done to allow for a female ally without systematically confounding the presence of an ally and the presence of another female coworker across conditions.

Procedure. As in Study 1, participants were told that they were taking part in a study that examines individuals' ability to immerse themselves in workplace contexts. After completing the consent form, participants were asked to imagine that they are applying for a job in the chemistry field and were presented with information about a company from which they have recently received an offer. Participants were shown images and descriptions of their potential coworkers (see Materials, Appendix A). Images and descriptions were counterbalanced across conditions. Each participant was randomly assigned to view either a male ally, a female ally, or no ally among the ostensible coworkers. To assess perceptions of the ally target, participants were told that they may be asked to evaluate some of their coworkers, with one being randomly selected from the full set. It was said that such evaluation would be done to determine how people evaluate potential coworkers. In actuality, all participants were asked to evaluate the same coworker (the ally, or the last coworker in the control condition). After reading about all of their coworkers, participants then answered the dependent variables. Once the dependent variables were completed, participants were be debriefed and compensated for their time.

Measures. This study employed all main dependent variables from Study 1 (efficacy, support, positive evaluation of work environment, and inclusion) and other additional measures described below (see Appendix A for full items and Table 3 for correlations between dependent measures).

Stereotyped evaluations. The extent to which participants expected that their coworkers would evaluate them on the basis of gender stereotypes was assessed with a modified scale from Cejka and Eagly (1999), (Cronbach's $\alpha = 0.76$). Participants used a 1 "Strongly disagree" to 7 "Strongly agree" Likert scale to respond to the six items. e.g., *I think that people in this company*

will see me as warm in relation to others because of my gender", "My future coworkers in this company are likely to see me as good at reasoning," (reverse scored).

Perception of ally motivations. Three items assessed the perceived motivations of the ally (Cronbach's $\alpha = 0.87$). Participants used a 1 "Strongly disagree" to 7 "Strongly agree" Likert scale to respond to each item. Examples of this measure include *"This person would have my back in the company,"* and *"This person seems committed to social justice."* All participants, regardless of ally condition, answered this measure for one of the coworkers presented.

Evaluation of ally. Perceptions of the ally were measured with two items assessing the extent to which they perceived the ally as friendly ($r = 0.71$). Participants used a 1 "Strongly disagree" to 7 "Strongly agree" Likert scale to respond to each item. Examples of this measure are *"I like this person,"* and *"This person appears to be friendly."* All participants, regardless of ally condition, answered this measure for one of the coworkers presented.

Workplace hostility. Anticipated workplace hostility was measured using a modified version of the Observed Hostility Toward Women in the Workplace Scale (Miner-Rubino & Cortina, 2007). This scale was modified to assess anticipated workplace hostility rather than observed workplace hostility (Cronbach's $\alpha = .95$). This 6-item scale asks participants to rate anticipated workplace hostility on a scale of 1 "Strongly disagree" to 7 "Strongly agree." An example is *"Employees in this company are likely to ignore, fail to listen to, or interrupt female employees."*

Personal stereotype endorsement. Five items assessed the extent to which participants endorse gender stereotypes after exposure to different work environments (Cronbach's $\alpha = .72$). Participants used a 1 "Strongly disagree" to 7 "Strongly agree" Likert scale to respond to each

item (e.g., *"I believe women are generally more nurturing than men,"* and *"I believe women are less mathematically competent than men."*

Respect from Coworkers. A single item measured the extent to which participants anticipate respect from their coworkers. Participants used a 1 "Strongly disagree" to 7 "Strongly agree" Likert scale to respond this item. This item was *"I feel that my coworkers would respect me."*

Results

Manipulation Checks. The majority of participants (78.7%) correctly identified the manipulations. Fifty-five participants failed either the manipulation checks or the attention check asking them to select *"Somewhat Disagree"* and were dropped from analysis. The final sample was 204. In addition, participants were asked to answer two conceptual manipulation checks. These items assessed the extent to which they believed that women in the company promote gender equality and that men in the company promote gender equality. A one-way ANOVA between conditions indicated that women exposed to a male ally did see men in the company as interested in promoting gender equality ($F = 19.643$, $p < 0.001$). Participants exposed to a male ally indicated that men at the company were more likely to promote gender equality ($M = 5.45$, $SD = 1.13$), significantly higher than the female ally condition (See Table 4 for means and standard deviations, $p < 0.001$) and the control condition ($p < 0.001$). The female ally and control condition did not significantly differ ($p = 0.61$).

Similarly, a one-way ANOVA between conditions indicated that women exposed to a female ally perceived women in the company to be interested in promoting gender equality ($F = 43.636$; $p < 0.001$). Participants exposed to a female ally indicated the strongest belief that

women in the company promoted gender equality (M = 6.01, SD = 0.99; see Table 4), significantly more than the male ally condition ($p < 0.001$) and the control condition ($p < 0.001$). Participants exposed to a male ally perceived women in the company to be more interested in promoting gender equality than participants exposed to the control ($p < 0.001$).

Inclusion. A one-way ANOVA between the male, female, and control conditions indicated a significant main effect of condition (F (2, 201) = 3.54, p = 0.03, $\eta^2 = 0.034$; see Figure 5). Consistent with the hypothesis, participants exposed to a male ally anticipated the highest level of inclusion (M = 5.53, SD = 1.06; see Table 4), significantly higher than participants exposed to a female ally (p = 0.009) and marginally higher than participants exposed to the control (p = 0.102). Participants exposed to either a female ally or the control condition did not differ in anticipated inclusion (p = 0.438).

Support from coworkers. A main effect of condition was significant (F (2, 201) = 4.82, $p < 0.001$; $\eta^2 = 0.046$; see Figure 6), such that participants anticipated more support in a work environment with a male ally (M = 5.87, SD = 1.0; See Table 4) than a work environment with a female ally (p = 0.02) or a work environment with no ally (p = 0.003). There was not a significant difference in anticipated support for participants exposed to a female ally or no ally (p = 0.33).

Positive perception of work environment. The two measures were standardized and combined to form an index of positive perception of the work environment. A one-way ANOVA between the male ally, female ally, and control condition indicated a significant main effect of condition (F (2, 201) = 9.48 $p < 0.001$; $\eta^2 = 0.086$; see Figure 7). Consistent with the hypothesis, participants exposed to a workplace with a male ally reported a significantly higher positive

perception of the workplace (M = 0.41, SD = 0.63; see Table 4) than participants exposed to a workplace with a female ally ($p < 0.001$) or participants exposed to no ally ($p < 0.001$). There was no difference in perception of the work environment for participants exposed to a female ally compared to no ally ($p = 0.83$).

Efficacy. A one-way ANOVA between the male ally, female ally, and control condition showed there was no main effect of condition ($F(2, 201) = 1.27$, $p = 0.28$), such that there were no differences across condition in anticipated efficacy. To further probe this measure, an exploratory linear regression was conducted that included Feminist Identification as a moderator. A significant interaction between condition and feminist identification emerged ($F(2, 201) = 3.26$, $p = 0.04$, $\eta^2 = 0.031$). The simple effect of feminist identification was significant in the male ally condition ($t(201) = 1.89$, $p = 0.05$) and non-significant in the female ally condition ($t(201) = -1.26$, $p = 0.2$) or no ally control condition ($t(201) = -1.28$, $p = 0.2$). This analysis revealed that women who highly identified as feminist expressed higher levels of anticipated efficacy in a company with a male ally.

Hostile work environment. Results from a one-way ANOVA between the male ally, female ally, and control condition indicated a main effect of condition on anticipated hostility of the work environment (F (2, 201) = 3.94, $p = 0.02$, $\eta^2 = 0.037$; see Figure 8). As expected, participants exposed to a workplace with a male ally reported a significantly lower anticipation of a hostile work environment (M = 2.08, SD = 0.96; see Table 4) than participants exposed to a workplace with a female ally (M =2.61, SD = 1.39; $p < 0.008$) or participants exposed to no ally (M = 2.55, SD = 1.18; $p < 0.03$). There was no difference in anticipation of a hostile work environment for participants exposed to a female ally compared to no ally ($p = 0.77$).

Stereotyped evaluations. A one-way ANOVA between the male ally, female ally, and control condition showed there was no main effect of condition ($F(2, 201) = 1.5$, $p = 0.22$), such that there were no differences across conditions in anticipation of stereotyped evaluations. To further examine this measure, an exploratory linear regression was conducted that included Feminist Identification as a moderator of stereotyped evaluations by condition. A significant interaction between feminist identification and condition emerged ($F(2, 201) = 3.09$, $p = 0.047$, $\eta^2 = 0.029$), such that participants who strongly identified as a feminist and who were exposed to a male ally expected lower stereotyped evaluations than strongly identified feminists exposed to either a female ally or no ally.

Stereotype endorsement. A one-way ANOVA indicated no significant main effect of condition on the extent to which participants endorsed stereotypes ($F(2, 201) = 1.05$, $p = 0.35$). To further probe this measure, we next conducted an exploratory linear regression that included feminist identification as a moderator of stereotype endorsement by condition. The interaction between feminist identification and ally condition was not significant ($F(2, 198) = 1.80$, $p = 0.16$, $\eta^2 = 0.018$).

Respect from coworkers. As predicted, results from a one-way ANOVA between the male ally, female ally, and no ally condition indicated that there was a main effect of condition on anticipated respect from coworkers (F (2, 201) = 5.63, $p = 0.004$, $\eta^2 = 0.053$). Participants exposed to a male ally anticipated higher levels of respect from coworkers ($M = 5.82$, $SD = 0.91$; see Table 4) than participants exposed to either a female ally ($p = 0.009$) or no ally ($p = 0.002$). Pairwise comparisons indicated that anticipated respect for participants exposed to a female ally or no ally did not significantly differ ($p = 0.43$).

Perception of target coworker as an ally. A one-way ANOVA between the male ally, female ally, and no ally conditions revealed a main effect of condition (F (2, 201) = 24.82, p < 0.001, η^2 = 0.198). Pairwise comparisons indicated that participants who were exposed to either a male ally or a female ally believed they would have an ally in the company more than participants exposed to no ally (ps < 0.001). There was not a difference between the male ally and female ally condition in terms of perceptions that one would have an ally in the company (p = 0.45). This indicates that although participants in the female ally and male ally conditions were equally likely to anticipate that they would have an ally in the company, only women who were shown a male ally showed protective effects of allyship against tokenism.

Liking of target coworker. A one-way ANOVA was conducted to examine the potential difference in the extent to which participants liked the ally across conditions. Results of the one-way ANOVA indicated a marginal main effect of condition (F(2, 201) = 2.87, p = 0.058), such that participants in the male ally condition reported greater liking of the ally (M = 5.77, SD = 0.92; see Table 4) than participants in the control condition with no ally (p = 0.04). There was no difference between the female ally and the male ally conditions in reported liking of the ally (p = 0.45). Lastly, participants reported no differences in reported liking between the female ally condition and the no ally control condition (p = 0.35).

Perception of target coworker as self-serving. A one-way ANOVA between the male ally condition, female ally condition, and no ally control condition revealed no main effect of condition for perceptions of the ally as self-serving (F (2, 201) = 1.61, p = 0.20). This indicates the ally or coworker were perceived as equally motivated by their own interests across conditions.

Mediation analysis.

Support-Inclusion Model. We predicted support would mediate the relationship between the ally manipulation and inclusion. The presence of an ally in a workplace may lead participants to anticipate higher levels of support in the workplace. Higher anticipated support may lead participants to anticipate more inclusion in company events. This was tested using moderated mediation analysis with the "lavaan" package in R using 5,000 bias-correcting bootstrap resamples. Consistent with the hypothesis, analysis using support as a mediator indicated a significant indirect effect of coworker condition (contrast coded with male ally condition as the comparison; Hayes & Preacher, 2013) on anticipated inclusion for participants exposed to a male ally compared to the female ally condition or the no ally control condition. The male ally condition predicted higher expected support compared to the no ally control condition (β = 0.533, *SE* = 0.178, 95% CI = 0.178, 0.875) and the female ally condition (β = 0.368, *SE* = 0.161, 95% CI = 0.067, 0.700). Support from a male ally predicted anticipated inclusion in the workplace (β = 0.545, *SE* = 0.071, 95% CI = 0.400, 0.676). The C prime paths predicting inclusion from the ally condition for the male versus no ally control (β = 0.006, *SE* = 0.131, 95% CI = -0.253, 0.262) and the male ally versus female ally (β = 0.229, *SE* = 0.153, 95% CI = -0.062, 0.530) were not significant. A significant indirect effect emerged for the male versus control no ally condition (β = 0.290, *SE* = 0.103, 95% CI = 0.105, 0.521) and for the male versus female ally condition (β = 0.201, *SE* = 0.092, 95% CI = 0.040, 0.401)[1].

[1] To further test this mediation model, a reverse model was conducted with inclusion as the mediator between ally condition and support. There was a significant indirect effect for the male ally condition compared to the female condition (β = 0.231, *SE* = 0.091, 95% CI = 0.067, 0.428) but not for male ally condition versus the no ally control condition (β = 0.159, *SE* = 0.098, 95% CI = -0.015, 0.377).

Respect-Efficacy Model. We hypothesized that respect would mediate the relationship between ally condition and anticipated efficacy in the company. Participants exposed to a male ally, but not a female ally or no ally, were predicted to anticipate greater levels of respect from their coworkers. Participants who anticipated that their coworkers would respect them were predicted to indicate higher levels of competence and confidence in the company. Analysis using the "lavaan" package in R using respect from coworkers as a mediator indicated a significant indirect effect of coworker condition (contrast coded with male ally as the comparison) on anticipated efficacy for participants exposed to a male ally compared to the no ally control condition, provided support for our hypothesis. Participants in the male ally condition anticipated higher levels of respect than the no ally control condition (β = 0.558, *SE* = 0.156, 95% CI = 0.253, 0.886) or the female ally condition (β = 0.425, *SE* = 0.162, 95% CI = 0.106, 0.735). Increased anticipation of respect due to a male ally predicted efficacy (β = 0.474, *SE* = 0.091, 95% CI = 0.287, 0.634). The C prime path predicting efficacy from ally condition was not significant for the male ally versus no ally control (β = 0.020, *SE* = 0.169, 95% CI = -0.277, 0.402) or the male ally versus female ally condition (β = -0.026, *SE* = 0.147, 95% CI = -0.286, 0.282). As predicted, a significant indirect effect emerged such that respect mediated the ally condition and anticipated efficacy for participants in the male ally condition compared the no ally control condition (β = 0.265, *SE* = 0.093, 95% CI = 0.113, 0.478) and compared to the female ally condition (β = 0.201, *SE* = 0.082, 95% CI = 0.057, 0.381).

Stereotyped evaluations model. Similar to the respect-efficacy model, we predicted that respect would mediate the relationship between ally manipulation and expectations of stereotyped evaluations. Respect from fellow coworkers likely signals that one will be treated as an individual rather than along gender stereotypes. Analysis was conducted using the "lavaan"

package in R to examine the hypothesis that respect would mediate the relationship between ally condition and stereotyped evaluations. As predicted, using respect from coworkers as a mediator indicated a significant indirect effect of coworker condition (contrast coded with male ally condition as reference) on stereotyped evaluations for participants exposed to a male ally compared to the no ally control condition and the female ally condition. The male ally condition predicted anticipated respect for participants in the male ally versus no ally control condition (β = 0.558, *SE* = 0.156, 95% CI = 0.253, 0.866) and versus the female ally condition (β = 0.425, *SE* = 0.162, 95% CI = 0.106, 0.735). Respect predicted lowered expectations of stereotyped evaluations from coworkers (β = -0.452, *SE* = 0.084, 95% CI = -0.618, -0.289). The C prime path was not significant for the male ally condition versus the no ally condition (β = 0.097, *SE* = 0.149, 95% CI = -0.203, 0.378) and versus the female ally condition (β = -0.093, *SE* = 0.151, 95% CI = -0.389, 0.201). As expected, a significant indirect effect emerged for the male ally compared to the control condition (β = -0.252, *SE* = 0.085, 95% CI = -0.448, -0.116) and compared to the female ally condition (β = -0.192, *SE* = 0.079, 95% CI = -0.364, -0.056). This indicates that participants only anticipated fewer stereotyped evaluations to the extent that they felt that their coworkers would respect them[2].

Discussion

Results of Study 2 replicated and extended the results of Study 1. As in Study 1, the presence of a male ally protected against the negative effects of tokenism in a male dominated workplace. Study 2 extended Study 1 by examining the potential impact of the gender of the ally. We predicted that the presence of a male ally in a token workplace would protect against

[2] A reverse model with stereotyped evaluations mediating the relationship between ally condition and respect was not significant (indirect effect of male ally condition compared to no ally control condition β = -0.063, *SE* = 0.097, 95% CI = -0.377, 0.038; compared to the female ally condition β = -0.116, *SE* = 0.110, 95% CI = -0.470, 0.003).

tokenism more than the presence of a female ally or a control with no ally. We additionally predicted that the female ally would be more beneficial than no ally, but would be less beneficial than a male ally across dependent variables. Across all dependent measures, participants anticipated a more positive workplace when they were exposed to a male ally compared to a female ally or no ally. Contrary to the hypothesis, the presence of a female ally did not aid in protecting against the negative effects of tokenism and was in fact no more helpful than a control with no ally. This is particularly interesting as participants were equally likely to perceive a male and female ally as a person who would stand up against inequality, but only participants who were exposed to a male ally showed the downstream protective consequences of having an ally.

Mediation analysis assessing the psychological mechanisms by which allies may be beneficial supported the hypothesis that only in conditions where an ally is male are positive effects of allyship present. Additionally, mediation analysis supported the hypothesis that an ally aids in reducing negative token effects through increased support and increased respect. Compared to participants in a female ally or no ally condition, participants in the male ally condition anticipated greater levels of support which predicted greater likelihood of inclusion in the company. The knowledge that a member of the dominant group is invested in the wellbeing of members of marginalized groups led participants to feel that they would have support from their coworkers, which in turn predicted the extent to which participants expected that they would be included in workplace activities.

Mediation analysis that examined the role of increased expectations of respect further supported the hypothesis that feelings of respect would mediate the relationship between ally condition and anticipation of efficacy in the workplace. Respect from coworkers at the company was predicted by the presence of a male ally among coworkers but not a female ally or a

coworker composition with no ally. Increased respect predicted the expectation that one would be able to have efficacy and agency in that company.

Increased respect also mediated the relationship between ally condition and the expectation that one's coworkers would evaluate one along gender stereotypes. Participants who knew that they had a male ally among their coworkers anticipated higher levels of respect from their coworkers than participants who had a female ally or no ally. Increased respect due to presence of a male ally predicted lower likelihood that one's coworkers would evaluate them according to gender stereotypes.

Taken together, the results from Study 2 indicate that allies in a token workplace context are effective—but only when the ally is male. Although the female ally was perceived as being willing to stand up against gender inequality and have other women's backs, this did not translate to greater anticipation of respect and support from coworkers. In fact, participants in the female ally condition did not differ from the no ally control condition in anticipation of respect and support from fellow coworkers. This provides evidence of the importance of messages regarding gender equality from members of the dominant group, in this case men.

Study 3

Studies 1 and 2 supported our main hypothesis that the presence of a male ally in a male dominated work environment ameliorates the negative consequences of token status for women. Although evidence supported the hypothesis that male allies would protect against the negative consequences of tokenism more than female allies or no ally, we are still unsure what it is about a male ally that produces these positive effects. It is possible that male allies are perceived as having more influence over the opinions and ideas of other coworkers than women who support

gender equality or coworkers who do not address gender equality. Prior research suggests that men who advocate for gender equality are more persuasive and influential than women who advocate for gender equality (Czopp & Monteith, 2003; Eagly et al., 1978; Heckman et al., 2017; Rudman et al., 2012; Rudman & Glick, 2001; Subasic et al). Allies who are members of the dominant group may be seen as especially helpful in token contexts in that they are members of the higher status outgroup and therefore have an advantage in influencing the opinions of other members of their ingroup. It is possible that women who have a male ally perceive this as "having an in" with the dominant group. To address this potential mechanism, Study 3 will assess the extent to which participants view allies as having influence over others in the company.

Another way in which a woman may feel that she "has an in" with the dominant group is to befriend a member of that outgroup. It is possible that it is unnecessary that the ally directly be in support of gender equality; rather, a friend from the dominant group might also signal a welcoming environment, which in turn decreases tokenism's negative effects. To address this possibility, Study 3 examines whether the presence of an ally or a friendly coworker have different downstream consequences in anticipation of the work atmosphere. We hypothesize that participants exposed to a male coworker who identifies as an ally will report higher levels of anticipated support, inclusion, overall positive perception of the work environment, and will anticipate fewer stereotyped evaluations than participants who are shown a female ally, a female friend, or a male ally.

Method

Participants. A power analysis in G*Power was conducted prior to collecting data which indicated that 338 participants were necessary to achieve a power of 0.90 with a medium effect

size. In anticipation of dropping participants due to quality of TurkPrime data, 368 participants were recruited for the study. White women (N= 368) were recruited via TurkPrime Panels. Participants were excluded from final analysis if they failed the manipulation or attention check (34 participants failed the attention check or incorrectly identified a coworker). Additionally, four participants were dropped from analysis due to qualitative responses indicating problems with the study (e.g., "This study was feminist paranoia," "This was feminist propaganda. This is why I despise feminists!"). Lastly, one participant was dropped from analysis due to indicating an age of 3 years old. The sample decreased from 368 to 329 after applying these exclusion criteria, with ages ranging from 18-87 years (M = 41.69, SD = 14.99).

Design. This experiment used a 2 (coworker type: ally vs friend) by 2 (coworker gender: male vs female) between-subjects factorial design. All participants were exposed to a male dominated work environment with five male coworkers and one female coworker.

Procedure. As in Study 1 and Study 2, participants were told that the study ostensibly sought to examine individuals' ability to immerse themselves in workplace contexts. After completing the consent form, the participants were asked to complete demographic information and a questionnaire regarding the extent to which they identified with their gender and as a feminist. Then, participants were asked to imagine that they are applying for a job in the chemistry field and were presented with information about a company from which they have recently received an offer. Participants were shown images and descriptions of their potential coworkers (see Materials, Appendix A). Images and descriptions were counterbalanced across conditions. The participants were randomly assigned to conditions that varied the presence of a friendly coworker or the presence of a coworker that identified themselves as an ally. Second, the gender of the ally versus friend coworker was randomly assigned. Participants were informed

that they may be randomly asked to evaluate one of their coworkers. In actuality, all participants evaluated the male/female ally/friend coworker. After evaluating the coworker, participants completed the dependent measures. Lastly, the participants were debriefed and compensated for their participation.

Measures. This study employed all main dependent variables from Study 2 (efficacy, support, positive evaluation of work environment, inclusion, stereotyped evaluations, and perceptions of the ally) (see Appendix A for full items and Table 5 for Cronbach's alphas and correlations between key dependent variables). We included one additional measure in this study to further examine why the ally may be effective.

Influence of the target coworker. Three items measured the extent to which participants viewed the target coworker as having influence and power in the company (Cronbach's α = 0.84). Example items from this measure include *"It seems like this person would have a lot of influence in the company,"* and *"This person would be able to influence the opinions of other coworkers at Chemistry Corp."* All items were measured on a 1 "Strongly disagree" to 7 "Strongly agree" Likert scale.

Results

Manipulation checks. To assess the success of the manipulation, participants responded to two conceptual manipulation checks on a 1 "Strongly disagree" to 7 "Strongly agree" Likert scale. The first was *"Men in this company promote gender equality."* A two-way ANOVA indicated that the gender by ally manipulation was successful. A significant interaction emerged ($F(1, 324) = 20.85$, $p < 0.001$, $\eta^2 = 0.06$; see Table 6 for means and standard deviations across dependent measures) such that participants shown a male ally rated the male coworkers in the

company as significantly more likely to support gender equality than participants exposed to a female ally, a male friend, or a female friend (all *p*s < 0.001).

Next, participants responded to the item *"Women in this company promote gender equality,"* for the second manipulation check. A two-way ANOVA indicated that the manipulation succeeded. The main effect of gender was significant ($F(1, 324) = 21.43$, $p < 0.001$, $\eta^2 = 0.06$) such that participants for whom a female coworker was present rated women in the company as more likely to support gender equality. The main effect of ally was also significant ($F(1, 324) = 32.72$, $p < 0.001$, $\eta^2 = 0.102$) such that participants in the ally condition had higher ratings than participants in the friend condition that the women in the company support gender equality. A significant interaction emerged ($F(1, 324) = 4.05$, $p = 0.04$, $\eta^2 = 0.012$) such that participants in the female ally condition had significantly higher ratings that women in the company would support gender equality than women exposed to either a male ally or a friendly coworker (*p*s < 0.001).

Inclusion. The main effect of coworker gender was significant ($F(1, 323) = 9.32$, $p = 0.002$) with participants exposed to a male coworker expecting more inclusion than participants exposed to a female coworker. The main effect of the ally/friend condition was marginally significant ($F(1, 323) = 3.22$, $p = 0.07$). These main effects were qualified by a significant interaction ($F(1, 323) = 8.80$, $p = 0.003$) such that participants with a male ally anticipated significantly more inclusion ($M = 5.64$, $SD = 0.91$; see Table 6) than participants exposed to a female ally ($p = 0.0025$) and participants exposed to a male friend ($p = 0.01$). Participants in the female friend condition expressed marginally higher inclusion than participants in the female ally condition ($p = 0.07$). Lastly, anticipated inclusion for participants in the female friend condition did not significantly differ from the male friend condition ($p = 0.24$).

Support. A two-way ANOVA revealed a significant main effect of gender ($F(1, 324) = 7.183$, $p = 0.007$) but no main effect of ally condition ($F(1, 324) = 0.224$, $p = 0.64$). As predicted, a significant two-way interaction emerged ($F(1, 324) = 4.05$, $p = 0.04$, $\eta^2 = 0.012$) such that participants who were exposed to a workplace with a male ally anticipated significantly greater levels of support ($M = 5.78$, $SD = 0.86$; see Table 6) than those exposed to a female ally ($p = 0.007$), a female friend ($p = 0.02$) or a male friend ($p = 0.01$). Pairwise comparisons indicated that the female ally, female friend, and male friend conditions did not significantly differ on anticipated levels of support (all ps > 0.6).

Positive perception of the work environment. A significant main effect of gender indicated that participants perceived the workplace as more positive when they were shown a male coworker ($F(1, 324) = 2.37$, $p = 0.01$) than a female coworker. There was no main effect of ally condition ($F(1, 324) = 0.91$, $p = 0.36$). Contrary to our hypothesis, a two-way ANOVA did not indicate a significant interaction between the ally condition and the gender of the target ($F(1, 324) = 1.44$, $p = 0.23$).

Harassment. A significant main effect of target coworker gender ($F(1, 324) = 4.68$, $p = 0.03$) indicated that participants exposed to a female coworker anticipated higher levels of harassment than participants exposed to a male coworker. The main effect of ally condition was not significant ($F(1, 324) = 0.013$, $p = 0.90$). As predicted, a significant interaction between ally condition and gender ($F(1, 324) = 4.98$, $p = 0.02$, $\eta^2 = 0.015$) indicated that participants in a workplace environment with a male ally anticipated significantly lower likelihood of harassment ($M = 2.12$, $SD = 1.06$; see Table 6) than participants in a workplace environment with a female ally ($p = 0.03$), a female friend ($p = 0.04$), or a male friend ($p = 0.002$). Pairwise comparisons

indicated that there were no significant differences in anticipated harassment for participants in the male friend, female friend, or female ally conditions (all *p*s > 0.31).

Stereotyped evaluations. The main effect of gender was significant ($F(1, 324) = 16.92$, $p < 0.001$) such that participants exposed to a female target coworker were more likely to expect stereotyped evaluations by their coworkers. The main effect of ally condition was also significant ($F(1, 324) = 4.12$, $p = 0.04$), where participants in the ally condition anticipated fewer stereotyped evaluations than in the friend condition. These main effects were qualified by a significant two-way interaction between gender and ally condition ($F(1, 324) = 10.10$, $p = 0.001$, $\eta^2 = 0.03$). Support was obtained for the hypothesis that participants exposed to a male ally would anticipate significantly fewer stereotyped evaluations ($M = 2.147$, $SD = 0.67$; see Table 6) than participants exposed to a female ally ($p < 0.001$), a male friend ($p = 0.015$), or a female friend ($p = 0.04$). Further, pairwise comparisons showed that the male and female friend condition did not differ on anticipation of stereotyped evaluations ($p = 0.67$). Participants in the female ally condition anticipated significantly higher expectations of stereotyped evaluations than participants in the female friend condition ($p = 0.04$).

Efficacy. Results from a two-way ANOVA indicated no significant main effect of gender ($F(1, 324) = 1.25$, $p = 0.26$) and no main effect of ally condition ($F(1, 324) = 1.63$, $p = 0.20$). There was no significant interaction between gender and ally condition ($F(1, 324) = 1.54$, $p = 0.21$).

Respect from coworkers. The main effect of coworker gender was significant ($F(1, 324) = 8.62$, $p = 0.003$), indicating that participants shown a male coworker expected more respect from others than participants shown a female coworker. The main effect of ally condition was not significant ($F(1, 324) = 2.17$, $p = 0.14$). A marginal two-way interaction emerged such that

participants exposed to a male ally expected more respect from their coworkers ($F(1, 324) = 3.18$, $p = 0.07$) than participants shown a female ally or a male friend. Additionally, pairwise comparisons indicated that the female ally, male friend, and female friend conditions did not significantly differ in anticipated levels of respect (ps > 0.1).

Liking of target coworker. A two-way ANOVA between the ally condition and gender indicated marginal main effects for both gender (F (1, 324) = 2.74, p = 0.09**)** and ally condition (F (1, 324) = 2.96, p = 0.08**)**. A significant two-way interaction emerged between ally condition and gender (F (1, 324) = 5.07, p = 0.02, $\eta^2 = 0.015$). Individuals liked a male ally or a female friend significantly more than a female ally or a male friend.

Perception of target coworker as an ally. The main effect of ally condition was significant ($F(1, 324) = 16.72$, $p < 0.001$), indicating that participants exposed to an ally were significantly more likely to believe they had a coworker who would be their ally than participants exposed to a friend. The main effect of gender was not significant ($F(1, 324) = 0.49$, $p = 0.48$). A significant two-way interaction between gender and ally condition emerged ($F(1, 324) = 7.27$, $p = 0.007$, $\eta^2 = 0.022$). Perception that one had an ally did not significantly differ between the female ally and male ally condition ($p = 0.48$). Additionally, individuals who had a female friend at the company rated the target coworker as significantly higher in allyship than individuals who had a male friend at the company ($p = 0.002$). This interaction indicated that a female friend was perceived as more of an ally than a male friend.

Influence of target coworker. A two-way ANOVA indicated a significant main effect of target gender ($F(1, 324) = 7.55$, $p = 0.006$), indicating that a male coworker was perceived as having more influence than a female coworker, and no significant main effect of ally condition

($F(1, 324) = 0.033$, $p = 0.85$). As predicted, a significant two-way interaction emerged ($F(1, 324) = 8.79$, $p = 0.003$, $\eta^2 = 0.026$). Participants exposed to a male ally perceived the target coworker as having significantly more influence than participants exposed to a female ally ($p = 0.006$), a male friend ($p < 0.001$) or a female friend ($p = 0.01$). There were no significant differences in perceptions of influence between the female ally, male friend, and female friend conditions (all ps > 0.14).

Moderated mediation analyses.

Support-inclusion model. Moderated mediation analysis tested the hypothesis that feelings of support would mediate the effect of ally condition (coded ally = 1, friend = 0) on anticipated inclusion, with feelings of support moderated by the gender of the target coworker (coded male = 1, female = 0). We first regressed the ally manipulation condition, the gender of the ally/friend manipulation, and their interaction on anticipated support (standardized). Next, we regressed anticipated support (standardized) on anticipated inclusion (standardized). Coefficients, indirect effects, and index of moderated mediation were calculated using the "lavaan" package in R with 5,000 bias correcting bootstrapping resamples (Model 7, Preacher & Hayes, 2013). The interaction between coworker type and coworker gender significantly predicted anticipated support ($\beta = 0.438$, $SE = 0.198$, 95% CI = 0.084, 0.856) such that participants with a male ally anticipated greater levels of support, while controlling for the main effect of ally condition and gender. Further, anticipated support significantly predicted inclusion ($\beta = 0.759$, $SE = 0.035$, 95% CI = 0.691, 0.824). Consistent with the hypothesis, a significant index of moderated mediation emerged ($\beta = 0.332$, $SE = 0.15$, 95% CI = 0.065, 0.644) with a non-significant C prime path ($\beta = -0.064$, $SE = 0.076$, 95% CI = -0.194, 0.099). This indicated

that support mediated the relationship between inclusion and ally manipulation only when the coworker was an ally and male.

Respect-efficacy model. To assess the hypothesis that respect would mediate the relationship between ally condition and efficacy, with feelings of respect moderated by the gender of the target coworker, moderated mediation analysis was conducted with 5,000 bias-correcting bootstrap resamples. We first regressed the ally manipulation condition, the gender of the ally/friend manipulation, and their interaction on anticipated respect (standardized). Next, we regressed anticipated respect (standardized) on anticipated efficacy (standardized). Coefficients, indirect effects, and index of moderated mediation were calculated using the "lavaan" package in R with 5,000 bias correcting bootstrapping resamples (Model 7, Preacher & Hayes, 2013). The interaction of ally condition and target gender predicted, marginally, respect (β = 0.390, *SE* = 0.209, 95% CI = -0.014, 0.822), controlling for the main effects of ally condition and gender. This indicated that the presence of an ally who is male in a company predicted participants anticipated respect from coworkers. Respect significantly predicted anticipated efficacy in the company (β = 0.660, *SE* = 0.047, 95% CI = 0.562, 0.749). The index of moderated mediation was marginally significant (β = 0.257, *SE* = 0.141, 95% CI = -0.006, 0.562). The C prime path was not significant (β = -0.015, *SE* = 0.08, 95% CI = -0.169, 0.159).

Respect-stereotyped evaluations model. Moderated mediation analysis examined the hypothesis that feelings of respect would mediate the relationship between ally condition (coded ally = 1, friend = 0) and anticipated stereotyped evaluations, with respect moderated by the gender of the target coworker (coded male = 1, female = 0). We first regressed the ally manipulation condition, the gender of the ally/friend manipulation, and their interaction on anticipated respect (standardized). Next, we regressed anticipated respect (standardized) on

anticipated stereotyped evaluations (standardized). Coefficients, indirect effects, and index of moderated mediation were calculated using the "lavaan" package in R with 5,000 bias correcting bootstrapping resamples (Model 7, Preacher & Hayes, 2013). This analysis was run using 5,000 bias-correcting bootstrap resamples. The interaction of ally condition and gender significantly predicted anticipated respect from coworkers (β = 0.438, *SE* = 0.227, 95% CI = 0.014, 0.868), controlling for the main effect of ally condition and gender. Next, respect predicted lowered expectations of stereotyped evaluations from coworkers (β = -0.467, *SE* = 0.033, 95% CI = -0.530, -0.398). The index of moderated mediation was significant (β = -0.204, *SE* = 0.109, 95% CI = -0.423, -0.006). The C prime path was not significant (β = -0.040, *SE* = 0.067, 95% CI = -0.162, 0.097).

Influence-respect model. One last moderated mediation analysis was performed to test the hypothesis that the extent to which the ally is perceived as having influence in the company mediates the relationship between ally condition and respect, with expectations of respect moderated by the gender of the ally/friend. First, we regressed the ally manipulation condition, the gender of the ally versus friend manipulation, and their interaction on perceived influence of the target coworker (standardized). Second, perceived influence of the target coworker was regressed on anticipated respect from coworkers. Coefficients, indirect effects, and index of moderated mediation were calculated using the "lavaan" package in R with 5,000 bias correcting bootstrapping resamples (Model 7, Preacher & Hayes, 2013) Consistent with the hypothesis, a significant indirect effect emerged. The interaction between ally condition and gender significantly predicted perception of the target coworker as having influence in the company (β = 0.642, *SE* = 0.223, 95% CI = 0.228, 1.129), controlling for the main effects of ally condition and gender. Perception that the target coworker had influence was only significant when the

coworker was an ally and was male. Belief that the target coworker had influence in the company significantly predicted anticipation of respect from coworkers (β = 0.421, *SE* = 0.053, 95% CI = 0.312, 0.516). Lastly, the index of moderated mediation was significant (β = 0.270, *SE* = 0.097, 95% CI = 0.091, 0.478). The C prime path was not significant (β = -0.157, *SE* = 0.104, 95% CI = -0.338, 0.055). Results from this moderated mediation analysis support the hypothesis that influence of the ally is what drives perceptions that one will be respected by their coworkers.

Discussion

Study 3 sought to differentiate the impact of a potential workplace ally and a potential workplace friend. Additionally, Study 3 sought to replicate the results of Study 2 which found that a male ally is more effective than a female ally. Consistent with the hypothesis, the results of Study 3 indicated that a male workplace ally has powerful protective effects against token situations that is not present for a workplace friend, regardless of coworker friend gender. One exception to this finding was for anticipated inclusion. Participants with knowledge that they would have either a male ally or a female friend anticipated the same levels of inclusion in the company, each of which were significantly higher than that of participants with a male friend or female ally. It is possible that knowing that one has an ingroup friend would ameliorate concerns of isolation and exclusion in a company that is equal to knowledge that one has an ally from the dominant group.

As in Study 1 and Study 2, knowledge that one has an ally from the dominant group decreased the core negative effects of a token environment. These core negative effects include lack of inclusion, lack of support from fellow coworkers, and anticipation of being evaluated according to gender stereotypes. The presence of a male ally was more impactful in protecting

against the consequences of tokenism than knowledge that one has a friend in the company with whom one can commiserate.

Study 3 additionally further probed the psychological mechanisms underlying the impact of men who advocate for gender equality in a workplace. We had hypothesized two main pathways through which male allies decrease the negative effects of tokenism: respect and support. We predicted that a male ally would increase anticipation of respect, which would then decrease expectations of stereotyped evaluations and increase feelings of efficacy in the company. Further, we predicted that the presence of an ally from the dominant group would elevate feelings of support, which would then predict expectations that one would be included in the company. We predicted these paths would only be significant for participants exposed to an ally compared to friend, and that this would be moderated by target gender such that these positive downstream consequences would only emerge for participants who anticipated working in a company with a male ally.

As predicted, moderated mediation analysis revealed that knowledge of male ally in a coworker group predicted participants' anticipation that they would be supported by their coworkers. Anticipation of support then predicted the perception that one would be included in the work environment.

Moderated mediation analyses indicated the presence of male ally in a coworker group predicted anticipation of respect from coworkers. Anticipation that one would be respected by one's coworkers predicted participants' anticipation of being efficacious and agentic in the work environment. Similarly, anticipated respect due to a male ally decreased the perception that one was likely to be evaluated according to gender stereotypes.

We found support for the hypothesis that influence of the male ally drove perception that one would be respected in the company. Women were more likely to expect that their coworkers would respect them when they perceived a coworker to have influence over the opinions of other coworkers. Male coworkers who expressed allyship were perceived as the highest in influence compared to female coworkers or friendly coworkers. This finding suggests that male allies may set egalitarian norms in a company by being able to influence the opinions of other coworkers. Knowing that an individual who has power and is able to impact the ideas and opinions of coworkers around them is an ally that is especially impactful in decreasing concerns regarding working in a token context. These results begin to hint at a potential model for the ways in which women's workplace retention in STEM workplaces may be increased (e.g., influence of an ally increases anticipated respect and support, which predicts further positive effects in the workplace.

General Discussion

Across three studies, we found evidence to support the hypothesis that male allies are uniquely helpful in protecting against the negative effects of tokenism. Study 1 showed that participants who expected to work in a token context with a male ally anticipated the same amount of inclusion and support from their coworkers as participants who expected to work with an equal amount of men and women. Study 2 tested whether the gender of the ally must necessarily be male. In other words, Study 2 tested whether it is necessary that the ally be a member of the dominant group. The results of this study found that only participants for whom a male ally coworker was presented showed the protective effects of an ally in decreasing the negative consequences of tokenism. Knowledge that one has a female ally in a male dominated workplace was no more helpful in protecting against token contexts than having no ally

whatsoever. Study 3 tested the possibility that a friend of the dominant group might be adequate to produce the protective effects against token contexts, and that it may not be necessary that the ally express support of gender equality. The results of Study 3 determined that this is not the case. Only participants shown a male ally reported increases in support and inclusion and decreased likelihood of being evaluated along gender stereotypes. Participants who were shown a female ally, or a friendly coworker were not significantly different in their responses.

Studies 2 and 3 further examined the psychological mechanisms underlying the effectiveness of male allies. Results from both studies supported the hypothesis that allyship from the dominant group increases anticipated respect in the company. A significant indirect effect indicated that respect mediated the relationship between the ally condition and efficacy, such that participants felt that they would have efficacy in the company, to the extent to which they anticipated that their peers would respect them. Similarly, a significant indirect effect indicated that respect mediated the relationship between ally condition and anticipation of stereotyped evaluations. Participants expected that their peers would be less likely to evaluate them based on gender stereotypes when they were respected by their fellow coworkers.

Additionally, Study 3 examined what it is about a male ally that increases anticipated respect from coworkers. Expected influence of the ally was found to mediate the relationship between ally condition and anticipated respect from coworkers. Participants for whom a male ally was present in their coworker group indicated that the male ally was more influential than a female ally or a coworker friend. Belief that the ally had influence over the opinions and behaviors of other coworkers increased participant's expectations that other coworkers would respect them.

These studies support and extend previous research finding that men are perceived positively and effectively when advocating for gender equality (Czopp & Monteith, 2003; Eagly et al., 1978; Heckman et al., 2017; Rudman et al., 2012; Rudman & Glick, 2001; Subasic et al). Male allies were perceived as more influential than a female ally or no ally. Male allies were effective above and beyond being perceived as influential and persuasive. Women who were exposed to a male ally among their coworkers anticipated more support, inclusion, and happiness at the company. These findings indicate that the effectiveness of an ally is not only vital for persuading others around them, but for enhancing the psychological well-being of individuals who would otherwise feel the negative consequences of tokenism.

An argument could be made that a male ally signals paternalistic protection in line with benevolent sexism. In fact, data has shown that men who strongly endorse paternalistic duty and masculinity concerns are more likely to confront sexism (Good, Sanchez, & Moss-Racusin, 2016). However, it is important to recognize that women were more likely to anticipate respect from their coworkers when they would be working with a male ally. This indicates that the male ally was not perceived as wanting to help women out of a patriarchal need to protect women, but rather is seen as an empowering figure to work with. An analogy could be drawn from a brother advocating for his sister rather than a father protecting his daughter.

Men may be especially empowering to women in token environments but remain less likely to notice and recognize sexist acts (Blumenthal, 1998; Swim, Hyers, Cohen, & Ferguson, 2001). Not only are men less likely to recognize sexism, but are more likely to rate overtly sexist acts as less severe when noticed (Rodin, Price, Bryson, & Sanchez, 1990). The failure to recognize sexism is especially problematic as modern sexism is more likely to present in a

subtle, less detectable manner (Glick & Fiske, 1996). This presents a potential stumbling block if male allies are to be effective.

There are certain contexts and individual differences that increase the likelihood that men will recognize sexism. Drury and Kaiser (2014) indicated that men who reject status legitimizing beliefs may be more likely to recognize and confront sexism. Male allies who endorse status delegitimizing beliefs and the notion that social status hierarchy is unfair may be more likely to recognize that their position in society is unwarranted (Drury & Kaiser, 2014). Recognition of the unfairness of the status quo increases the likelihood that members of dominant groups will recognize discrimination against marginalized groups (Kaiser & Major, 2006). Additionally, men were more likely to acknowledge that favorable behaviors toward men and not women was a form of discrimination, when they did not endorse individual mobility beliefs and meritocratic ideologies (Major, Gramzow, McCoy, Levin, Schmader, & Sidanius, 2002). Similarly, men's endorsement of feminism and the belief that the society in which we live is patriarchal predicts the likelihood of recognition of sexism (Swim et al., 2001; Hyers, 2007) and decreases the likelihood of sexist language (Swim, Mallett, & Stangor, 2004). Future research should examine ways to increase status delegitimizing beliefs and endorsement of feminism (see Subasic et al., 2018).

Findings from these three studies add to scant literature on the effect that allies serve in workplaces. Previous research has found that female role models in a workplace aid in increasing both interest and retention in STEM fields (Shapiro, Williams, & Hambarchyan, 2013; Drury, Siy, & Cheryan, 2011; Hermann, Adelman, Bodford, Graudejus, Okun, & Kwan, 2016). Another way to increase women's interest and retention in male dominated fields is to remove the token context altogether; women indicated greater inclusion and performed better on male dominated

tasks when in a work group with an equal number of men and women (Beaton, Tougas, Rinfret, Huard, & Delise, 2007). While these findings do show powerful ways in which women may be more successful and comfortable in male dominated settings, these tactics are not always realistic. It is unlikely that a company would be willing or able to quickly change the gender composition of their employees. Although female role models in a workplace may increase women's likelihood of showing interest in male dominated fields, not every company has a female role model that another woman can look up to. The results of the current studies provide evidence for a possible method to help women, given the state of male dominated workplaces as they are today. Encouraging men to be allies for women represents a novel intervention to increase women's retention in male dominated workforces.

Limitations and Future Directions

These studies are not without limitations. One major limitation of the current research is that all participants imagined working in the company. The participants likely did not have experience working in the field of chemistry and may have been relying upon assumptions about male dominated workplaces. Future studies should examine the impact that allies can have in real groups in which participants have knowledge and contact with the other members of the group.

Although Studies 2 and 3 found evidence for mediation, we must also be cautious of making causal interpretations. For example, because we manipulated the ally condition, we can be confident that exposure to male allies causally increases anticipated respect in a company. Because we did not manipulate respect, we can only interpret the impact of respect on anticipated efficacy as correlational. To address the possibility that respect causes increased efficacy, we would need to experimentally manipulate respect. Future studies should

experimentally manipulate the mediators identified here to make more confident claims about the psychological processes resulting from exposure to a male ally.

The current studies did not have sufficient power to further test a potential structural equation model that may increase our understanding of how male allies can increase women's retention in male dominated fields. Study 3 began to illuminate evidence consistent with a possible structural equation model such that male allies increase anticipated respect due to perceived influence of the ally, which has further positive downstream consequences for women in the workplace. Future studies should narrow the research question to a two-cell design that manipulates the presence versus absence of a male ally. Narrowing the design to these two critical cells would allow us to collect a sufficiently powered study to allow for testing a complex structural equation model.

There are still many unanswered questions regarding the potential impact of allies in a workplace. The current studies have only examined the impact of allies in male dominated workplaces with highly male stereotypes about competence and intelligence. It may be possible that the utility of allies extend to other male dominated workplaces such with different stereotypes and expectations, such as mechanics and firefighters. The current research has only examined women's responses to allies. Future studies should examine how men respond to male allies in a workplace. Studies such as this would further help answer the question of whether male allies set a norm for other men working in the company. It is possible that other men in the company may also report greater support of gender equality after exposure to a male ally.

The current studies only found evidence for the effectiveness of male allies. Other research should begin to examine when and how women can be effective allies for other women in male dominated workplaces. A female ally who is of high status (such as a boss or a leader)

may be as beneficial as a male ally in undermining the negative effects of tokenism. Further, the current studies have only examined White women's responses to an all White company. A black male ally may be perceived as influential because of his identity as a male and as especially supportive due to a shared history of discrimination. Recent research by Chaney, Sanchez, and Remedios (2018) has begun to illuminate how the race of an ally may have different outcomes for women in a workplace. These findings suggested that exposure to similarly stereotyped out-group experts in a company, such as Black men, reduced women's cognitive interference due to social identity threat. Continued research ought to examine how race and gender may both impact the extent to which an ally is perceived as effective.

Conclusion

Across three studies, our findings supported the hypothesis that male allies protect women against the negative effects of a token environment. The impact of male allies was unique in protecting against token contexts compared to a female ally, or a male or female friend in a company. The studies presented here build upon prior research that has examined effectiveness of egalitarian messages from dominant versus marginalized groups. The current research also adds to the relatively small literature on the effects of allyship.

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Table 1. Correlations of all dependent variables. * indicates p-value < 0.05.

	α	1	2	3	4	5	6
1 Inclusion	0.94	-	0.74 *	0.59*	0.79*	0.19*	-0.02
2 Coworker Support	0.91		-	0.63*	0.70*	0.17*	-0.01
3 Efficacy	0.88			-	0.53*	0.26*	0.26
4 Positive Workplace	*r*=.79				-	0.12	-0.03
5 Gender ID	0.94					-	0.17
6 Feminist ID	0.92						-

Table 2. Means (standard deviations) of dependent variables by condition, Study 1.

	Token-Ally	Token-No Ally	Non-Token-Ally	Non-Token-No Ally
Inclusion	5.55 (1.11)	4.6 (1.19)	5.74 (0.91)	5.56 (1.12)
Efficacy	5.86 (0.82)	5.29 (0.84)	5.92 (0.79)	5.75 (0.82)
Coworker Support	5.87 (0.88)	4.88 (1.31)	6.01 (0.84)	5.93 (0.97)
Positive Perception of Company (Standardized)	0.13 (0.96)	-0.65 (1.16)	0.24 (0.79)	0.22 (0.82)

Results and Descriptive Statistics – Study 2

Table 3. Correlations between key measures, Study 2

	α	1	2	3	4	5	6	7
1. Efficacy	0.91	--	0.50**	-0.31**	0.56**	-0.45**	0.59**	0.47**
2. Inclusion	0.93		--	-0.74**	0.55**	-0.65**	0.65**	0.62**
3. Hostile WE	0.94			--	-0.49**	0.58**	-0.60**	-0.63**
4. Support	0.92				--	-0.43**	0.53**	0.66**
5. Stereo Eval	0.76					--	-0.54**	-0.45**
6. Pos. Percept.	r=0.72						--	0.66**
7. Respect								--

Note. Hostile WE = hostile work environment. Stereo Eval = expectations of stereotyped evaluations. Pos. Percept. = positive perception of the company. ** $p < 0.001$.

Table 4. Descriptive Statistics, Study 2

Ally Condition	*M*	*SD*	*N*
Efficacy			
Male Ally	5.65	0.83	66
Female Ally	5.48	1.00	83
No Ally Control	5.38	0.97	55
Support			
Male Ally	5.87	1.00	66
Female Ally	5.50	0.99	83
No Ally Control	5.33	0.96	55
Inclusion			
Male Ally	5.53	1.06	66
Female Ally	5.07	1.13	83
No Ally Control	5.21	0.96	55
Positive Perception of Workplace (Standardized)			
Male Ally	0.41	0.63	66
Female Ally	-0.18	1.05	83
No Ally Control	-0.15	0.89	55
Hostile Work Environment			
Male Ally	2.08	0.96	66
Female Ally	2.61	1.39	83
No Ally Control	2.55	1.18	55
Anticipation of Stereotyped Evaluations			
Male Ally	2.58	0.92	66
Female Ally	2.86	1.06	83
No Ally Control	2.73	0.92	55

Results and Descriptive Statistics – Study 3

Table 5. Correlations for key variables of interest, Study 3

	α	1	2	3	4	5	6	7
1. Efficacy	0.83	--	0.64**	-0.44**	0.61**	-0.63**	0.66**	0.66**
2. Inclusion	0.93		--	-0.81**	0.76**	-0.76**	0.76**	0.77**
3. Hostile Envir.	0.95			--	-0.59**	0.66**	-0.65**	-0.58**
4. Support	0.91				--	-0.57**	0.68**	0.71**
5. Stereo Eval.	0.78					--	-0.66**	-0.65**
6. Positive Per	*r*=0.82						--	0.78**
7. Respect								--

Note. Hostile Envir. = Anticipation of a hostile work environment. Stereo Eval. = expectation of stereotyped evaluations. Positive Per = positive perception of the work environment. ** $p < 0.001$

Table 6. Descriptive Statistics, Study 3

Ally Condition	Gender Condition	*M*	*SD*	*N*
Efficacy				
Ally	Male	5.57	0.67	82
	Female	5.40	0.96	85
Friend	Male	5.49	0.83	80
	Female	5.55	0.92	81
Support				
Ally	Male	5.78	0.86	82
	Female	5.32	1.19	85
Friend	Male	5.37	1.20	80
	Female	5.40	1.11	81
Inclusion				
Ally	Male	5.64	0.91	82
	Female	5.14	1.11	85
Friend	Male	5.24	0.91	80
	Female	5.43	1.11	81
Positive Perception of Workplace				
Ally	Male	5.37	1.02	82
	Female	4.92	1.34	83
Friend	Male	5.22	1.17	79
	Female	5.09	1.02	82
Hostile Work Environment				
Ally	Male	2.12	1.06	82
	Female	2.56	1.26	81
Friend	Male	2.75	1.51	80
	Female	2.56	1.37	81
Expectation of Stereotyped Evaluations				
Ally	Male	2.17	0.67	82
	Female	2.67	0.89	85
Friend	Male	2.47	0.73	82
	Female	2.42	0.85	81

Table 7. ANOVA Summary Table, Study 3

Source	*df*	*F*	*p*	η^2
Efficacy				
Ally Condition (A)	1	1.235	0.260	0.000
Gender (B)	1	1.627	0.203	0.001
A x B Interaction	1	1.540	0.215	0.005
Support				
Ally Condition (A)	1	0.224	0.637	0.005
Gender (B)	1	7.183	0.007	0.009
A x B Interaction	1	4.045	0.045	0.012
Inclusion				
Ally Condition (A)	1	3.218	0.073	0.001
Gender (B)	1	9.302	0.002	0.006
A x B Interaction	1	8.802	0.003	0.026
Positive Perception of Workplace				
Ally Condition (A)	1	0.082	0.364	0.000
Gender (B)	1	5.603	0.018	0.014
A x B Interaction	1	1.445	0.230	0.004
Hostile Work Environment				
Ally Condition (A)	1	0.013	0.907	0.002
Gender (B)	1	4.684	0.031	0.013
A x B Interaction	1	4.977	0.026	0.015
Expectation of Stereotyped Evaluations				
Ally Condition (A)	1	4.179	0.041	0.000
Gender (B)	1	16.928	0.001	0.021
A x B Interaction	1	10.103	0.003	0.030

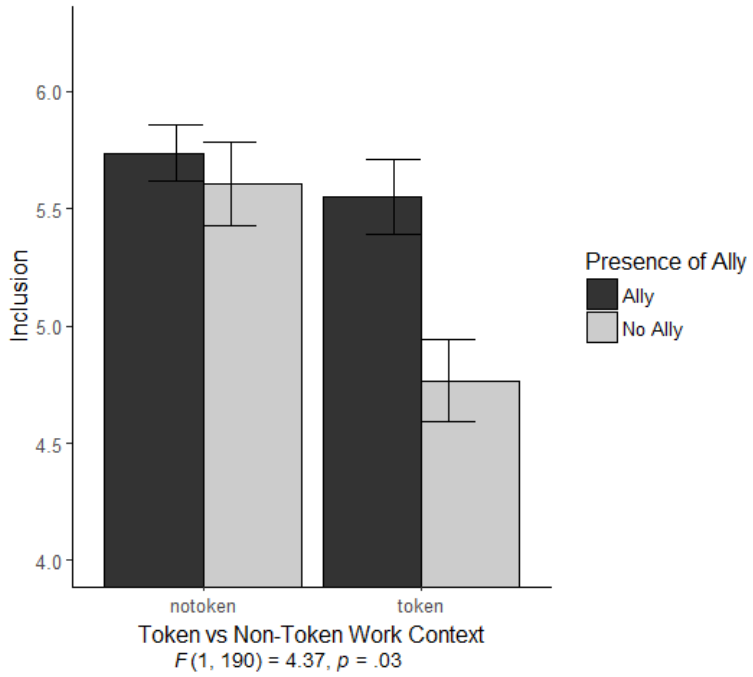

Figure 1. Mean inclusion as a function of group context (token vs non-token) and presence of an ally (present vs absent). Error bars represent standard errors.

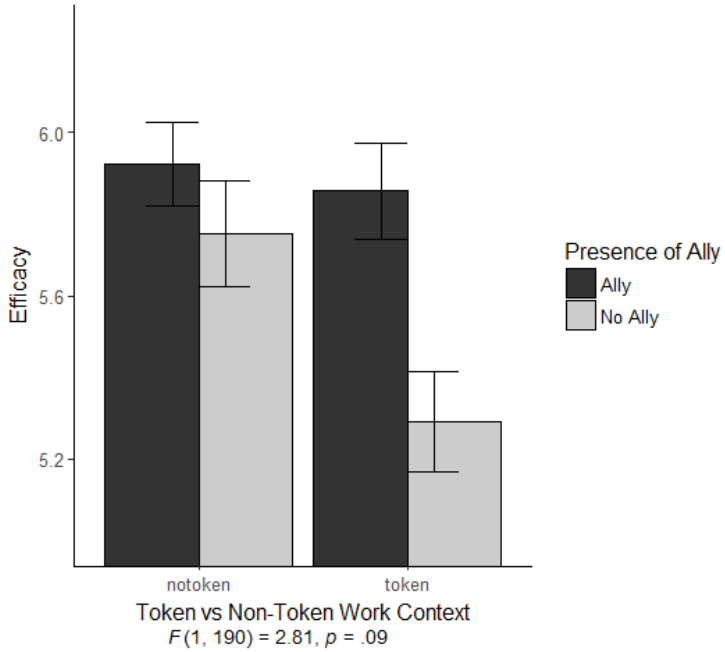

Figure 2. Mean efficacy as a function of group context (token vs non-token) and presence of an ally (present vs absent). Error bars represent standard errors.

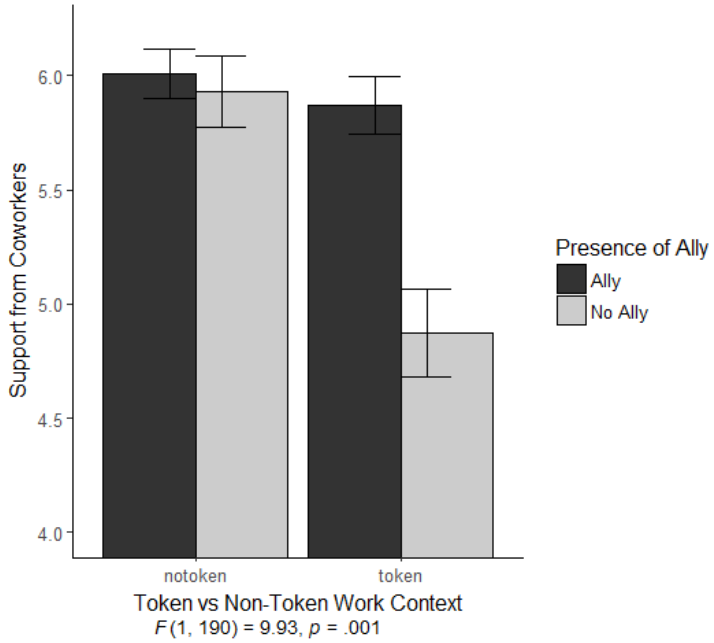

Figure 3. Mean Perception of Anticipated Support as a function of group context (token vs non-token) and presence of an ally (present vs absent). Error bars represent standard errors.

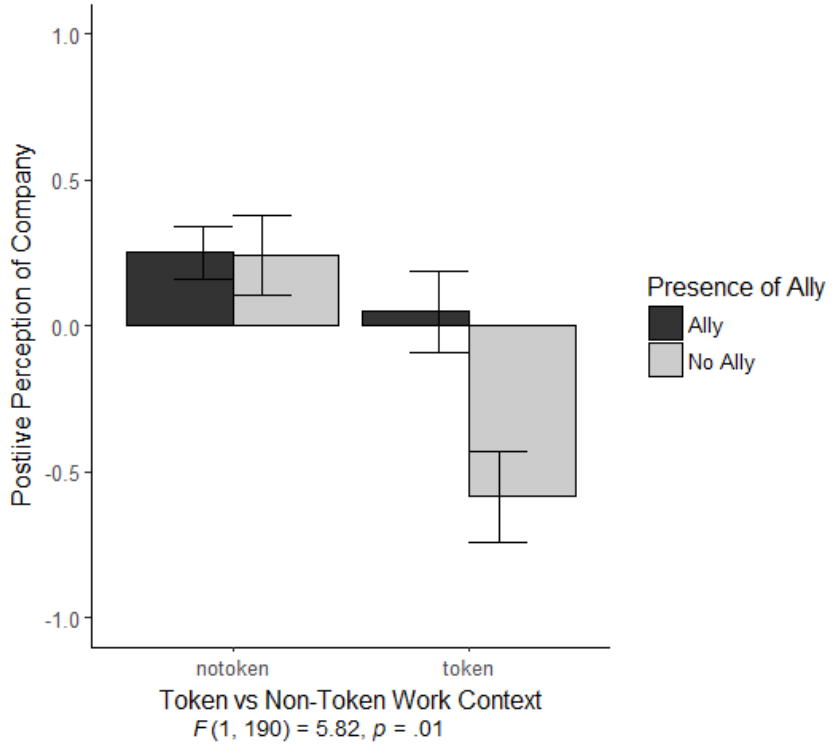

Figure 4. Mean Positive Perception of the Company as a function of group context (token vs non-token) and presence of an ally (present vs absent). Error bars represent standard errors.

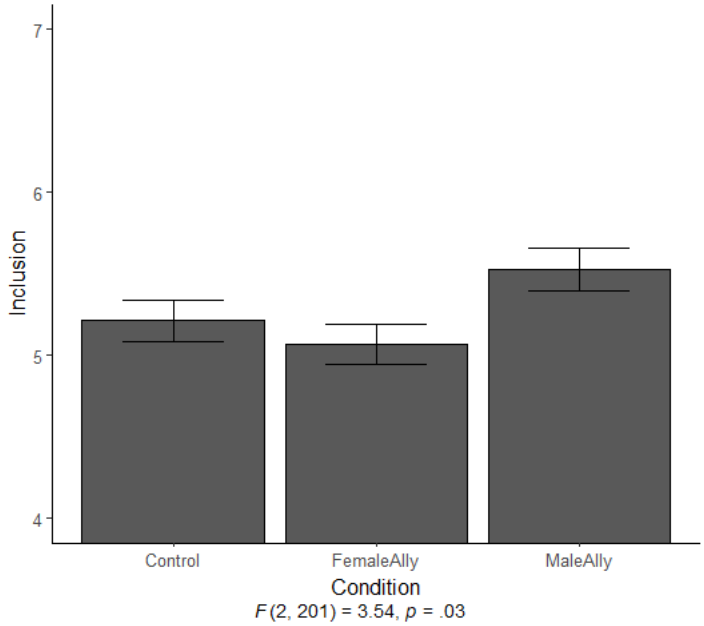

Figure 5. Mean Anticipated Inclusion as a function of ally condition (male ally, female ally, no ally control). Error bars represent standard errors.

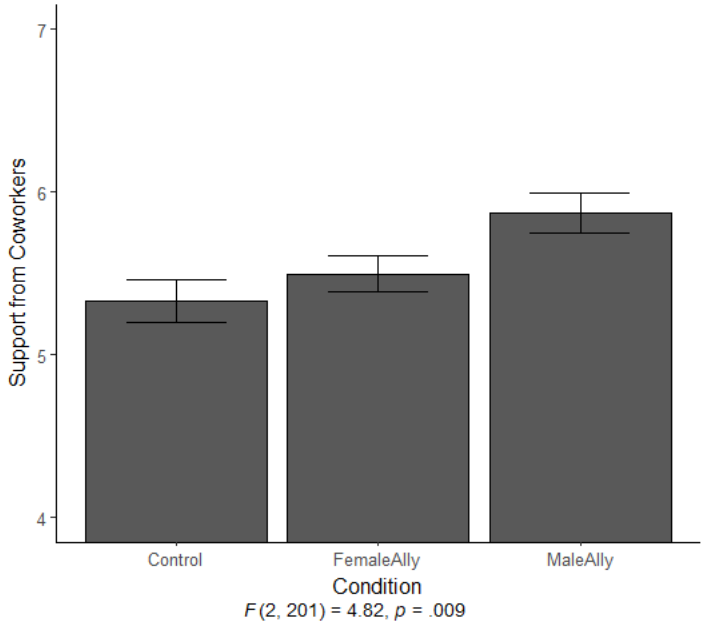

Figure 6. Mean Anticipated Support as a function of ally condition (male ally, female ally, no ally control). Error bars represent standard errors.

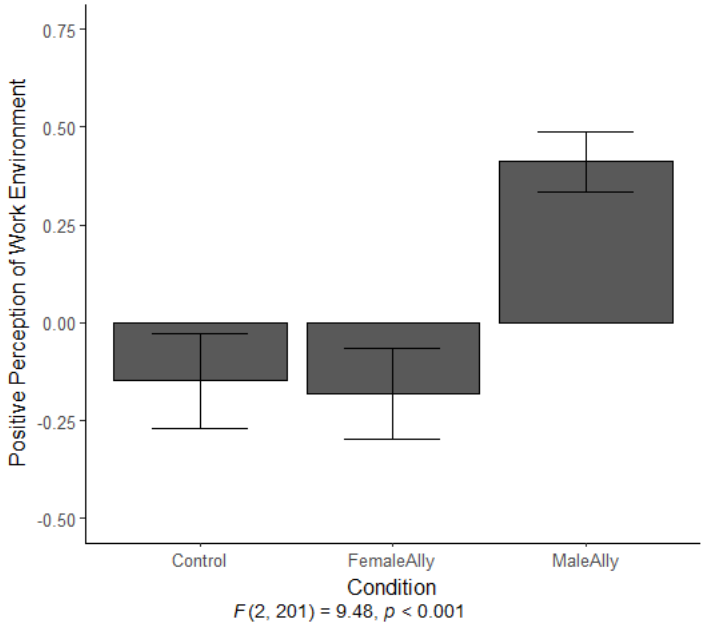

Figure 7. Mean Positive Perception of Work Environment as a function of ally condition (male ally, female ally, no ally control). Error bars represent standard errors.

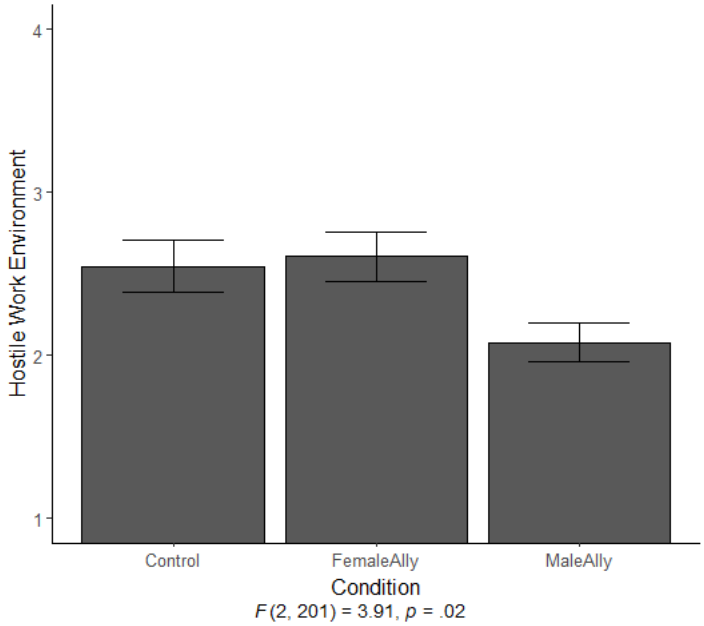

Figure 8. Mean Anticipation of a Hostile Work Environment as a function of ally condition (male ally, female ally, no ally control). Error bars represent standard errors.

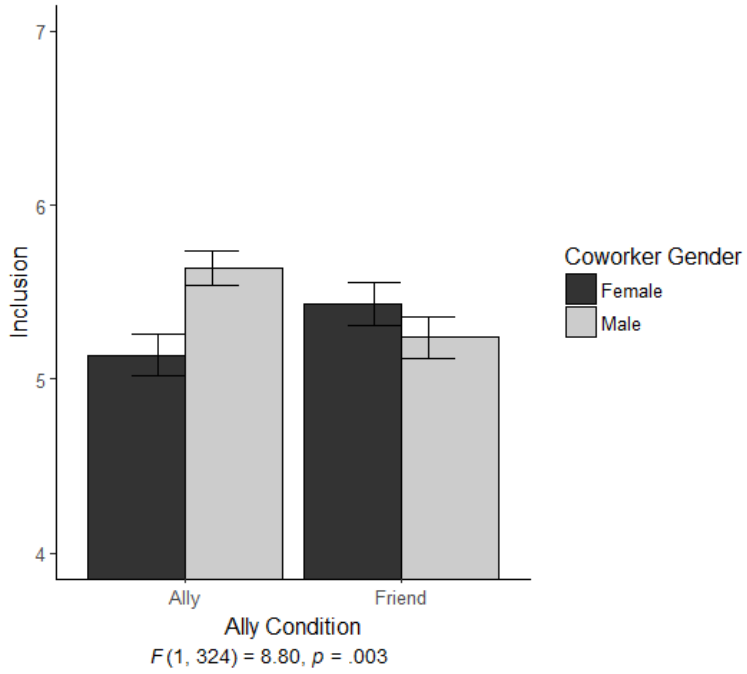

Figure 9. Mean Anticipated Inclusion as a function of ally condition (ally vs friend) and gender of target coworker (male vs female). Error bars represent standard errors.

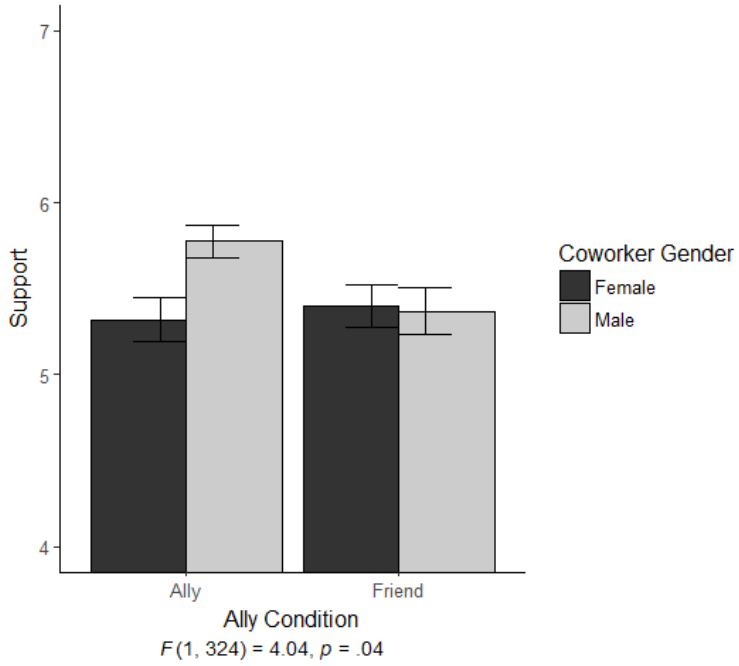

Figure 10. Mean Anticipated Support as a function of ally condition (ally vs friend) and gender of target coworker (male vs female). Error bars represent standard errors.

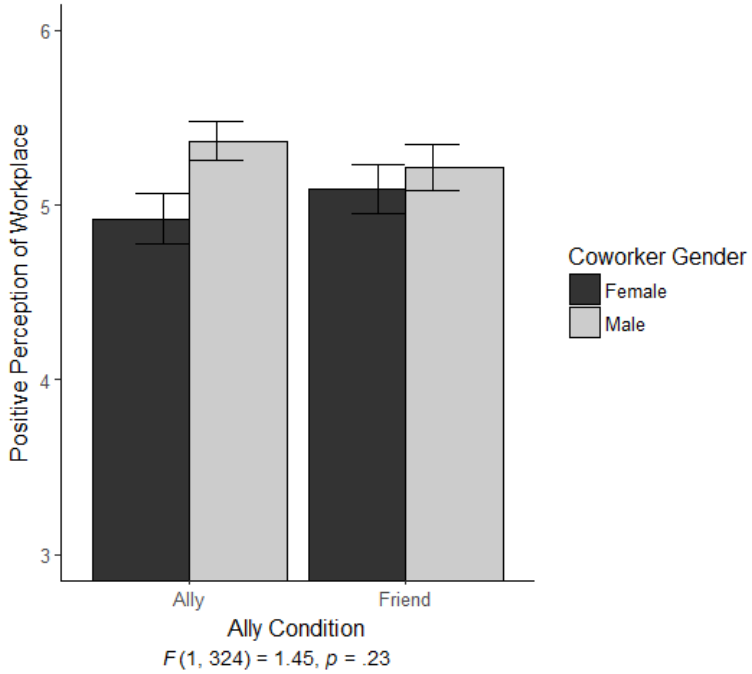

Figure 11. Positive perception of workplace as a function of ally condition (ally vs friend) and gender of target coworker (male vs female). Error bars represent standard errors.

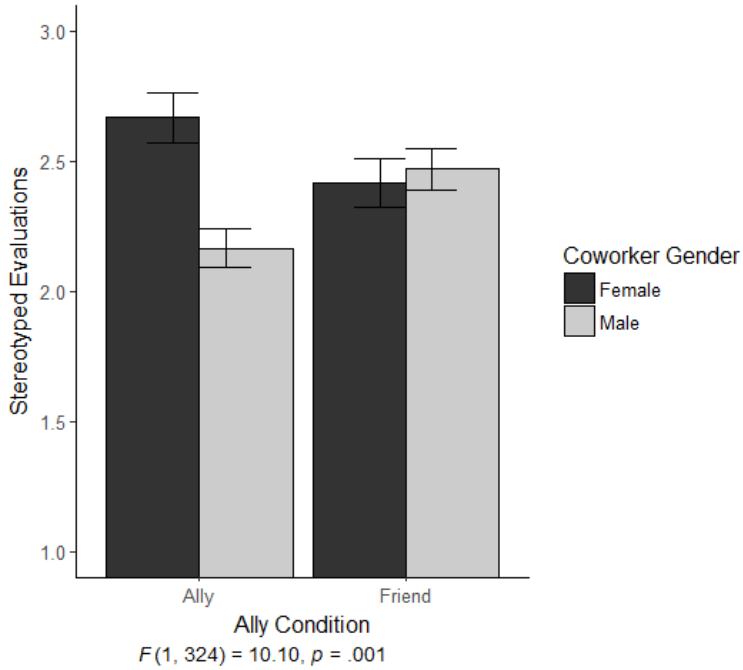

Figure 12. Mean Expectation of Stereotyped Evaluations from Coworkers as a function of ally condition (ally vs friend) and gender of target coworker (male vs female). Error bars represent standard errors.

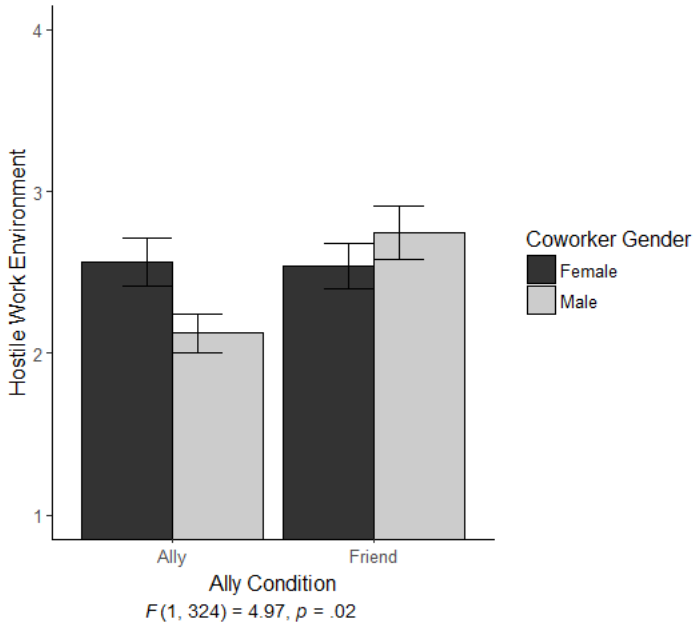

Figure 13. Mean Anticipation of a Hostile Work Environment from Coworkers as a function of ally condition (ally vs friend) and gender of target coworker (male vs female). Error bars represent standard errors.

Appendix A – Materials for Studies 1, 2, and 3

Informational flyer about chemistry company presented to all participants (Study 1, 2, 3)

CHEMISTRY CORP

At Chemistry Corp, we seek to safely and effectively utilize resources to meet customer needs while protecting the environment.

We invest in developing new technologies that we can implement in the most effective way possible.

Our employees are our priority, and we aim to promote internal employee growth and skill advancement. We take pride in following equal opportunity principles of employment.

Environmentally Friendly Research

Safe Practices

Employee Growth

New Technologies

CHEMISTRY CORP

CHEMISTRY

Male Coworkers

Female Coworkers

Information about coworkers (Study 1)

Blake: Hi, my name is Blake! [[One of my biggest aims working here is to make an inclusive environment. I am passionate about gender equality and work to assure that everyone is treated equally. If you take this job, I promise that you can count on me to be your ally. Other than that,]] my main job here is to design and implement new strategies to ensure effective and efficient activity in the labs.

Dan/Nicole: Hi, my name is Dan/Nicole. I am still relatively new to the company, but my favorite part of the job is getting to come up with new solutions to different problems.

Robert: Hello, I'm Robert. My main focus at Chemistry Corp is to analyze and write up our research results in an understandable manner.

Justin/Rachel: I love being able to be creative with my research at Chemistry Corp. The management lets us think out of the box when it comes to Research and Development.

Adam/Kelsey: Hi, I'm Adam/Kelsey! My main job is to approve people's ideas. I also work on finding the resources people need to complete their tasks.

Steve: Hello, I'm Steve. I'm a research assistant at Chemistry Corp, so I do whatever other people need me to do in the labs.

Study 2 Coworker Information

Blake: Hi, my name is Blake! [[**Male ally condition:** One of my biggest aims working here is to make an inclusive environment. I am passionate about gender equality and work to assure that everyone is treated equally. If you take this job, I promise that you can count on me to be your ally. Other than that,]]my main job here is to design and implement new strategies to ensure effective and efficient activity in the labs.

Dan: Hi, my name is Dan. I am still relatively new to the company, but my favorite part of the job is getting to come up with new solutions to different problems.

Kelsey: Hello, I'm Kelsey. [[**Female ally condition:** One of my biggest aims working here is to make an inclusive environment. I am passionate about gender equality and work to assure that everyone is treated equally. If you take this job, I promise that you can count on me to be your ally. Other than that,]] My main focus at Chemistry Corp is to analyze and write up our research results in an understandable manner.

Justin: I love being able to be creative with my research at Chemistry Corp. The management lets us think out of the box when it comes to Research and Development.

Adam: Hi, I'm Adam! My main job is to approve people's ideas. I also work on finding the resources people need to complete their tasks.

Steve: Hello, I'm Steve. I'm a research assistant at Chemistry Corp, so I do whatever other people need me to do in the labs.

Study 3 Coworker Information

Blake: Hi, my name is Blake! [[**Male ally condition:** One of my biggest aims working here is to make an inclusive environment. I am passionate about gender equality and work to assure that everyone is treated equally. If you take this job, I promise that you can count on me to be your ally. Other than that,]] [[**Male friend condition:** One of my biggest aims working here is to make a friendly and fun environment. Other than that,]]my main job here is to design and implement new strategies to ensure effective and efficient activity in the labs.

Dan: Hi, my name is Dan. I am still relatively new to the company, but my favorite part of the job is getting to come up with new solutions to different problems.

Kelsey: Hello, I'm Kelsey. [[**Female ally condition:** One of my biggest aims working here is to make an inclusive environment. I am passionate about gender equality and work to assure that everyone is treated equally. If you take this job, I promise that you can count on me to be your ally. Other than that,] [[**Female friend condition:** One of my biggest aims here is to make a fun and friendly environment. Other than that,]] My main focus at Chemistry Corp is to analyze and write up our research results in an understandable manner.

Justin: I love being able to be creative with my research at Chemistry Corp. The management lets us think out of the box when it comes to Research and Development.

Adam: Hi, I'm Adam! My main job is to approve people's ideas. I also work on finding the resources people need to complete their tasks.

Steve: Hello, I'm Steve. I'm a research assistant at Chemistry Corp, so I do whatever other people need me to do in the labs.

Measures – Study 1, Study 2, and Study 3

Efficacy All items measured on a 1 (strongly disagree) to 7 (strongly agree) Likert scale,

1. I would feel confident working in this company.
2. I could influence the way work is done at the job.
3. I would be able to influence decisions made in my department.
4. I would have the authority to make decisions at work.
5. I would have the capabilities required to do my job well.
6. I believe I would have the skills and abilities to do my job well.
7. I would have the competence to work effectively at this job.

Support from Coworkers All items measured on a 1 (strongly disagree) to 7 (strongly agree) Likert scale,

1. I feel that I would be able to go to my coworkers for support at this company.
2. I would know that I could count on my coworkers for help.
3. I feel that my coworkers would work to empower each other.
4. I feel that if any sexism occurred while working at Chemistry Corp, I would have support from my coworkers.

Inclusion. All items measured on a 1 (strongly disagree) to 7 (strongly agree) Likert scale,

1. I feel that I would be left out on activities and meetings that could enhance my career. (Reverse scored)
2. I feel that I would miss out on opportunities to be mentored. (Reverse scored)
3. I feel that I would be out of the loop. (Reverse scored)
4. I would feel isolated at this company. (Reverse scored)

5. I think that I would miss face to face contact with coworkers. (Reverse scored)
6. I feel that I would miss the emotional support of coworkers. (Reverse scored)
7. I would miss out on informal interactions with others. (Reverse scored)
8. I would feel valued at this company.
9. I feel that I could trust my coworkers.
10. I would like working with these coworkers.

Positive Perception of Work Environment All items measured on a 1 (strongly disagree) to 7 (strongly agree) Likert scale,

1. How likely are you to stay working at this company?

   1 (extremely unlikely) 2 3 4 5 6 7 (extremely likely)

2. Use the slider to indicate how happy you would be working at this company. (1-100)

Measures – Study 2

All items answered on a (1) Strongly disagree to (7) strongly agree Likert scale.

Evaluation of ally – Friendliness

1. I would like this person.
2. This person appears to be friendly.

Evaluation of ally – allyship

1. This person would stand up against inequality.
2. This person would "have my back" in the company.
3. This person appears committed to social justice.

Evaluation of ally – influence

1. It seems that this person has a lot of influence in the company.
2. This person seems to have a lot of power in the company.
3. This person would be able to influence the opinions of others in the company.

Evaluation of ally – self-serving

1. I think this person may be motivated by their own self-interests.

Workplace hostility (Miner-Rubino & Cortina, 2007)

1. I imagine staff would ignore, fail to listen to, or interrupt a female employee.
2. I would imagine that staff in this company are likely to speak in a condescending or patronizing manner to a female employee.
3. I think that staff at this company are likely to treat female employees in a discourteous or disrespectful manner.
4. Staff at this company are likely to make derogatory gender-related comments to female employees.
5. I think that staff are likely to make sexually suggestive comments to female employees.
6. I imagine that staff would make offensive or embarrassing public comments on the physical appearance of female employees.

Stereotyped Evaluations (Cejka & Eagly, 1999)

Personality traits

1. I think that people in this company will see me as warm in relation with others because of my gender.

2. People in this company are likely to view me as more nurturing because of the gender to which I identify.
3. I am likely to be viewed as more affectionate than male coworkers.

Abilities

1. I think the employees in this company will likely view me as analytical.
2. My future coworkers in this company are likely to see me as good at reasoning.
3. I think the employees in this company will see me as good at problem solving.

Personal Stereotype Endorsement

1. I believe women are generally more nurturing than men.
2. Men tend to be more skilled mathematically than women.
3. I think that women are generally more understanding of others.
4. It seems like men are usually better at reasoning.
5. I have found that women are generally not as skilled at math as men.

Perception of Ally Motivations

1. This person seems to have good intentions for the people in the company.
2. I believe that this person may be motivated by their own self-interest.

Respect from Coworkers

1. I feel that my coworkers would respect me.